Imperial Valley Study Group

# Appendix D

## Transmission Planning Studies
## Vol. 4

Post-Transient Data
Production Simulations

# Imperial Valley Study Group

## Appendix D.1

Post Transient Analysis

# Imperial Valley Study Group

## Appendix D.1.1

Study Assumptions

## Post-Transient Study Assumptions

*Post-Transient Cases*

The Post-Transient analysis was performed on seven (7) Cases, two (2) Benchmark cases and five (5) scenario cases using the GE PSLF Version 13.1 program. The benchmark cases represent heavy summer 2014 and light autumn 2014. There are two (2) heavy summer alternative case and three (3) light autumn alternative cases. These seven cases were as follows:

1) Heavy Summer Benchmark (ivsg_hs_rev4)
2) HS, Imperial Valley – Central, Dispatch 1 (ivsg_hs_alt2d1_s1)
3) HS, Imperial Valley – Northern – Ser/Val, Dispatch 1 (ivsg_hs_alt3bd1_s1)
4) Light Autumn Benchmark (ivsg_la_rev5)
5) LA, Imperial Valley – Central, Dispatch 3 (ivsg_la_alt2d3_s1)
6) LA, Imperial Valley – Central & Coachella Valley – Indian Hills, Dispatch 3 (ivsg_la_alt2ad3_s1)
7) LA, Imperial Valley – Northern – Ser/Val, Dispatch 3 (ivsg_la_alt3bd3_s1)

***Post-Transient Contingencies***

For this Post-Transient analysis 18 contingencies were run, two of which not apply to the two Benchmark cases. These eighteen (18) contingencies included twelve (12) single and six (6) double as follows:

*Single Contingencies*

1) Central – San Felipe 500 kV line (two alt 2's & alt 2a), Northern – San Felipe 500 kV (two alt 3b's), (this contingency does not apply to the Benchmark Cases (rev 4 & rev 5))
2) Banister – San Felipe 230 kV (this contingency does not apply to the Benchmark Cases (rev 4 & rev 5))
3) Devers – Valley 500 kV line
4) Valley – Serrano 500 kV line (rev 4 & 5, two alt 2's & alt 2a) or Valley – Ser/Val 500 kV line (two alt 3b's)
5) Palo Verde – Devers 1 500 kV line
6) Imperial Valley – North Gila 500 kV line
7) Imperial Valley – Miguel 500 kV line
8) Lugo – Mohave 500 kV line

9) Lugo – Mira Loma 500 kV line

10) Mira Loma - Serrano 500 kV line

11) Lugo – Victorville 500 kV line

12) Otay Mesa – Tijuana 230 kV line

*Double Contingencies*

1) Lugo – Victorville and Lugo – Vincent 500 kV lines
2) Lugo – Mira Loma 2 & 3 500 kV lines
3) Palo Verde – Devers 1 & 2 500 kV lines
4) SONGS – Talega 1 & 2 230 kV lines
5) 2 San Onofre units
6) 2 Palo Verde units

***Post-Transient Buses to Monitor***

For this Post-Transient analysis the following 25 buses were monitored, including nine (9) buses in SCE, seven (7) buses in SDG&E, four (4) in IID, four (4) in CFE, and one (1) in MWD:

| **Monitored Buses** | | |
|---|---|---|
| **CFE** | **SDG&E** | **SCE** |
| 20238 HRD-230 230 | 22260 ESCNDIDO 230 | 24804 DEVERS 230 |
| 20017 MEP-230 230 | 22356 IMPRLVLY 230 | 24086 LUGO 500 |
| 20118 ROA-230 230 | 22464 MIGUEL 230 | 24093 MIRALOMW 230 |
| 20149 TJI-230 230 | 22504 MISSION 230 | 24131 S.ONOFRE 230 |
| **IID** | 22716 SANLUSRY 230 | 24137 SERRANO 230 |
| 8311 COACHELA 230 | 22768 SOUTHBAY 69 | 24151 VALLEYSC 500 |
| 8332 ELCENTSW 230 | 22832 SYCAMORE 230 | 24156 VINCENT 500 |
| 8690 HIGHLINE 230 | **MWD** | 24901 VSTA 230 |
| 80300 NEWSF230 230 | 25417 IRONMTP1 6.9 | 24112 PADUA 230 |

***Post-Transient Reactive Margin Criteria***

The Reactive Margin Criteria used in this Post Transient analysis for SCE, SDG&E, CFE, and IID, was:

For SCE the following interim criteria will be used:

- Level B disturbance (single element outage): 300 Mvars
- Level C disturbance (double element outage): 150 Mvars

For SDG&E the following criteria will be used:

- Level B disturbance (single element outage): 150 Mvars
- Level C disturbance (double element outage): 75 Mvars

For CFE the following interim criteria will be used:

- Level B 230 kV disturbance (single element outage): 100 Mvars
- Level C 230 kV disturbance (double element outage): 50 Mvars

For IID the following interim criteria will be used:

- Level B disturbance (single element outage): 100 Mvars
- Level C disturbance (double element outage): 50 Mvars

It should be noted that the Reactive Margin Criteria used in this study is only applicable to this study and that they do not necessarily represent any utility's standard or policy. These values only represent the criteria used in this Study.

***Post-Transient Assumptions***

This Post-Transient analysis considered the period of time after the power and voltage transient oscillations have damped out and before operator intervention can take place. This time frame is approximately one and half (1½) to three (3) minutes subsequent to a disturbance. The following assumptions are inherent to this one and half (1½) to three (3) minute methodology:

1) Transient stability simulation of the disturbance has found the system to be stable and within the voltage and frequency dip criteria.
2) Sufficient time after the disturbance has elapsed such that the system frequency is uniform and turbine outputs have reached steady-state values.
3) Unless specific information is available, LTCs and regulators have sufficient regulating range and time delay settings such that post-transient voltages at loads are restored to the pre-disturbance levels.
4) Normal automatic generation control (AGC) will not significantly change generation within the one and half (1½) to three (3) minute time frame - either because of being too slow or because of being intentionally suspended after the disturbance. In power flow simulation, this means area interchange control is not active.
5) All turbine-generators will be reviewed as to whether the Base-load flag is set in power flow generator data. For units indicating "1", the unit will be assumed operating in base-load mode and adjustments up or down to generator loading will not be simulated in the

voltage stability analysis. For units not identified as base-loaded, the governor power flow routine will increase or decrease generator load due to governor action. All generators operating with free governors will pick up their share of the generation deficiency (or reduce excess) in proportion to their capacities (Pmax) and inversely proportional to their droop setting until they reach maximum/minimum output.

6) Phase shifters are assumed to hold a fixed angle.
7) Transmission voltage regulating transformers modeled in the pre-disturbance power flow to change taps in accordance with pre-set voltage schedules are fixed at their pre-disturbance level except where there is specific information to do otherwise.
8) Those remedial measures, which affect post transient steady state conditions, should be modeled. These remedial measures include high speed series capacitor switching, generation dropping and load (pump) dropping.
9) Shunt capacitors and reactors, modeled in the pre disturbance power flow to automatically switch "on" or "off" based on pre-set voltage schedules, are fixed at their pre-disturbance level except where there is specific information to do otherwise.
10) Bus voltage deviation shall not exceed 5 percent of its initial voltage unless agreed by the affected operating agent.
11) No system element should be loaded more than 100% of its emergency rating.
12) During post-contingency, all manually operated voltage control and phase shifting devices were fixed except as follows (which is to say that the following switchable shunts were allowed to float):

| SCE | | |
|---|---|---|
| ANTELOPE 230 | BARRE 230 | CHINO 230 |
| DEVERS 230 | EL NIDO 230 | GOULD 230 |
| KRAMER 230 | LCIENEGA 230 | LAGUBELL 230 |
| LA FRESA 230 | MESA CAL 230 | MIRALOMW 230 |
| MIRALOME 230 | MIRAGE 230 | MOORPARK 230 |
| OLINDA 230 | PADUA 230 | PARDEE 230 |
| RIOHONDO 230 | SANBRDNO 230 | S.CLARA 230 |
| VALLEYSC 115 | VICTOR 115 | VILLA PK 230 |
| VINCENT 230 | VISTA 230 | VSTA 230 |
| WALNUT 230 | | |

| SDG&E | | |
|---|---|---|
| CAPSTRNO 138 | EL CAJON 69 | LOSCOCHS 69 |
| MAIN ST 69 | MIGUEL 69 | MISSION 69 |
| PALOMAR 138 | SHADOWR 138 | TELECYN 138 |
| PENSQTOS 69 | SANLUSRY 138 | SYCAMORE 69 |
| PENSQTOS 230 | ESCNDIDO 230 | |

13) All generators which control a high side remote bus were set at the pre-disturbance voltage at the terminal bus, except for the following generators:

| | | |
|---|---|---|
| EHUNTR 1 24 | EHUNTR 2 24 | EHUNTR 3 22 |
| HUNTN G1 22 | HUNTN G2 22 | |

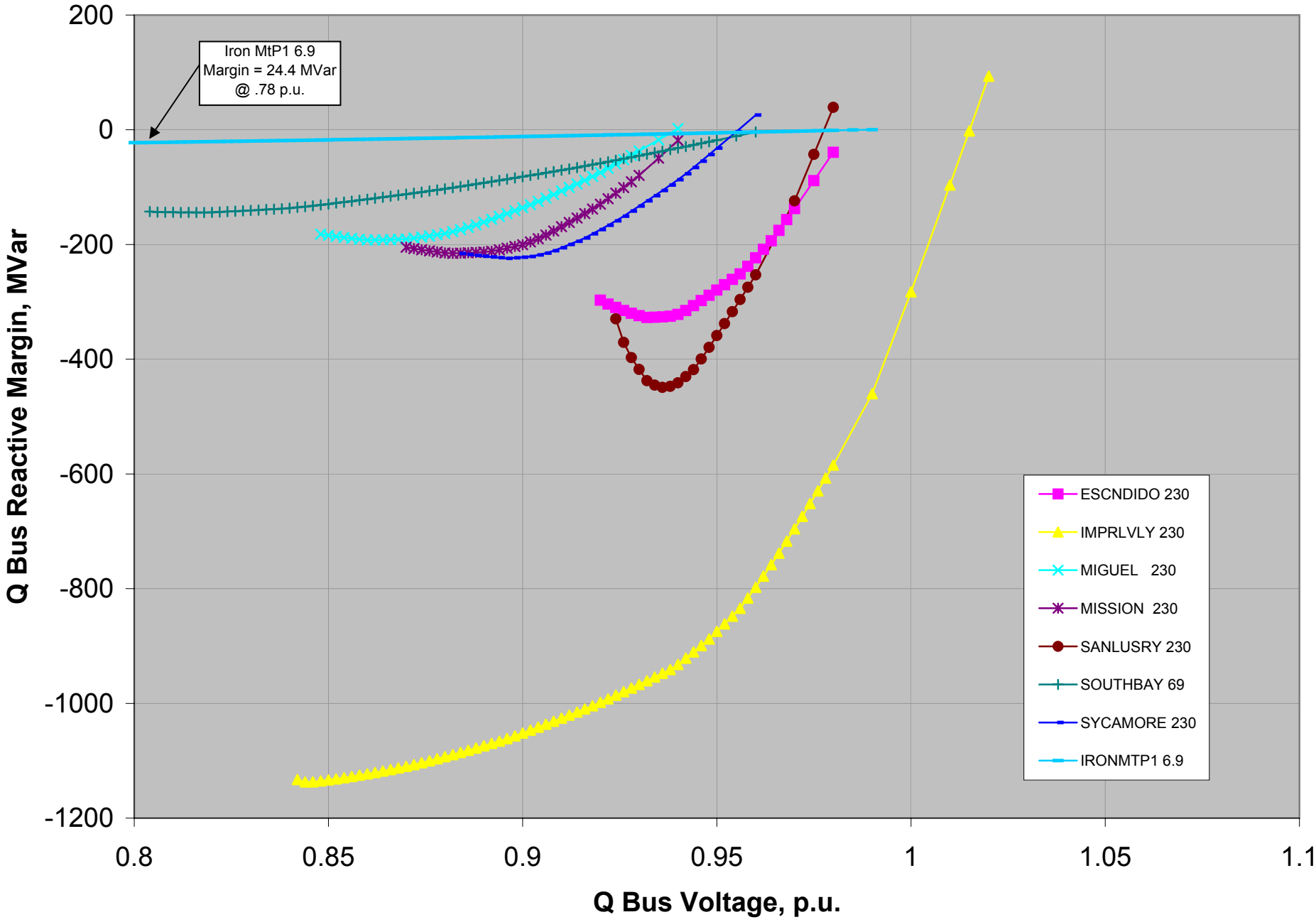
14) Northwest shunt capacitors modeled as synchronous condensers will be converted to fixed shunt capacitors using their pre-disturbance Mvar value except for Keeler and Maple Valley Static Var Compensators.

# Imperial Valley Study Group

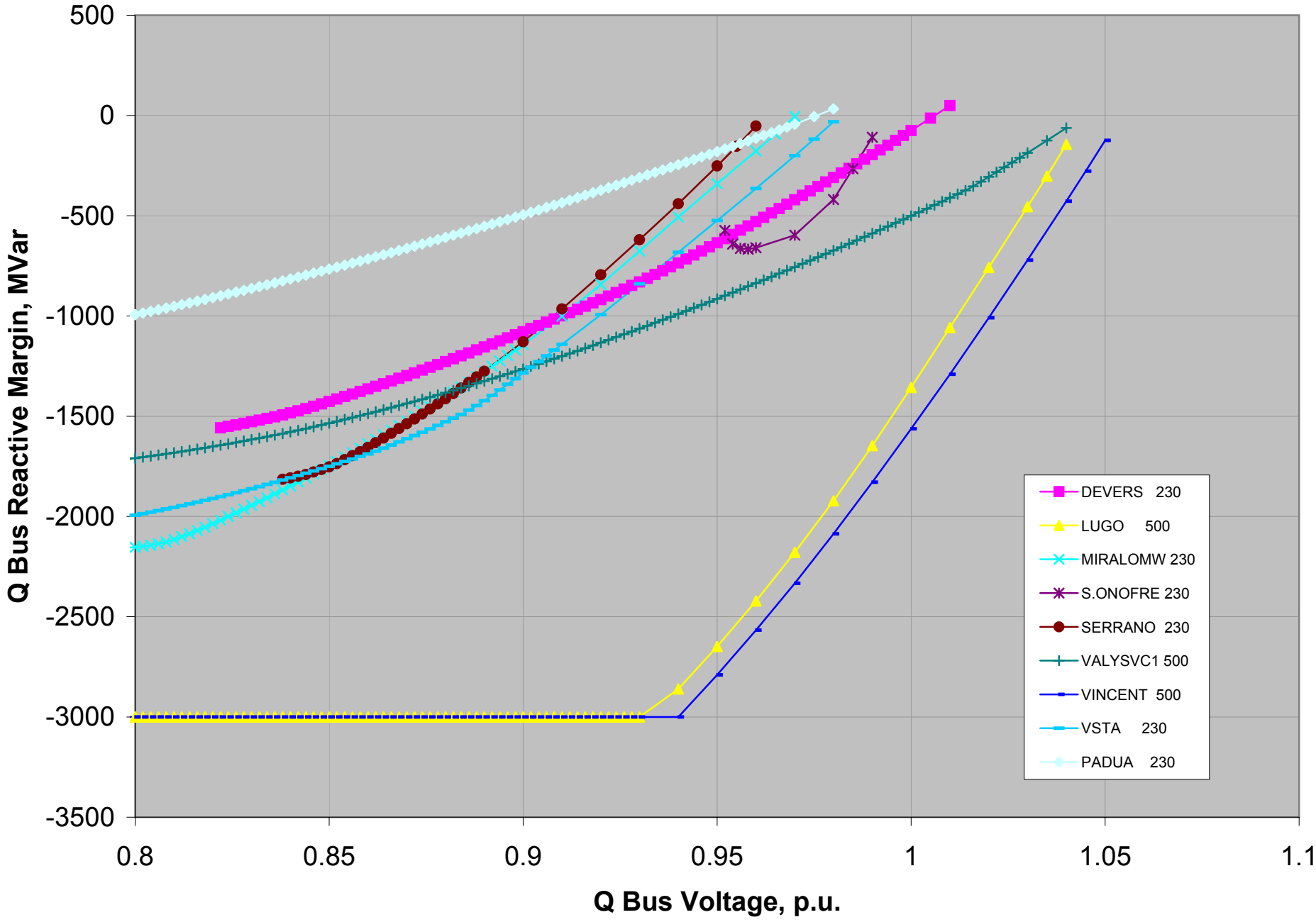
## Appendix D.1.2

Q-V Curves

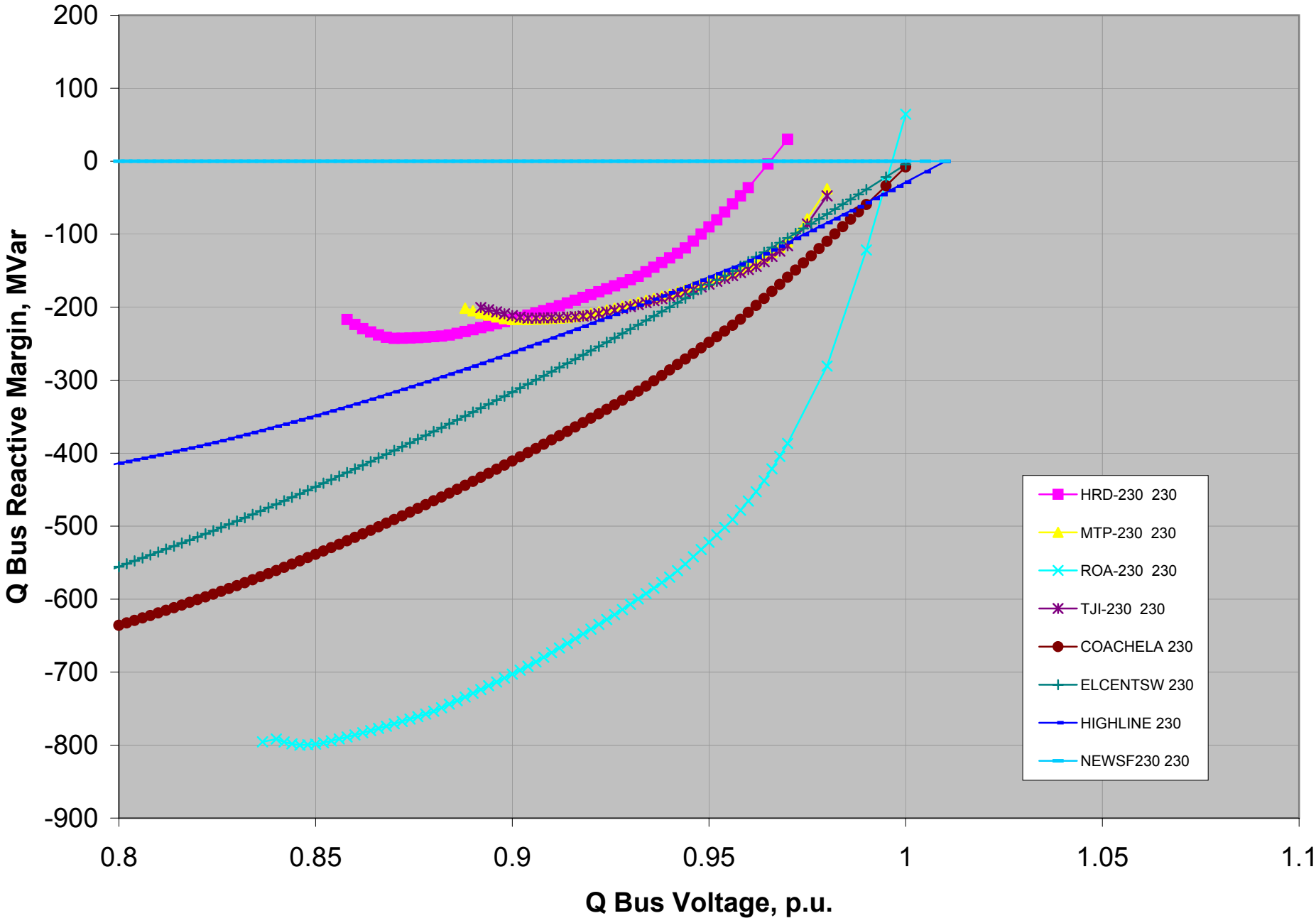
hs_rev4: HS Benchmark Case - No New Facilities, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_rev4_v2_ivml.nose Chart 1 - SDG&E



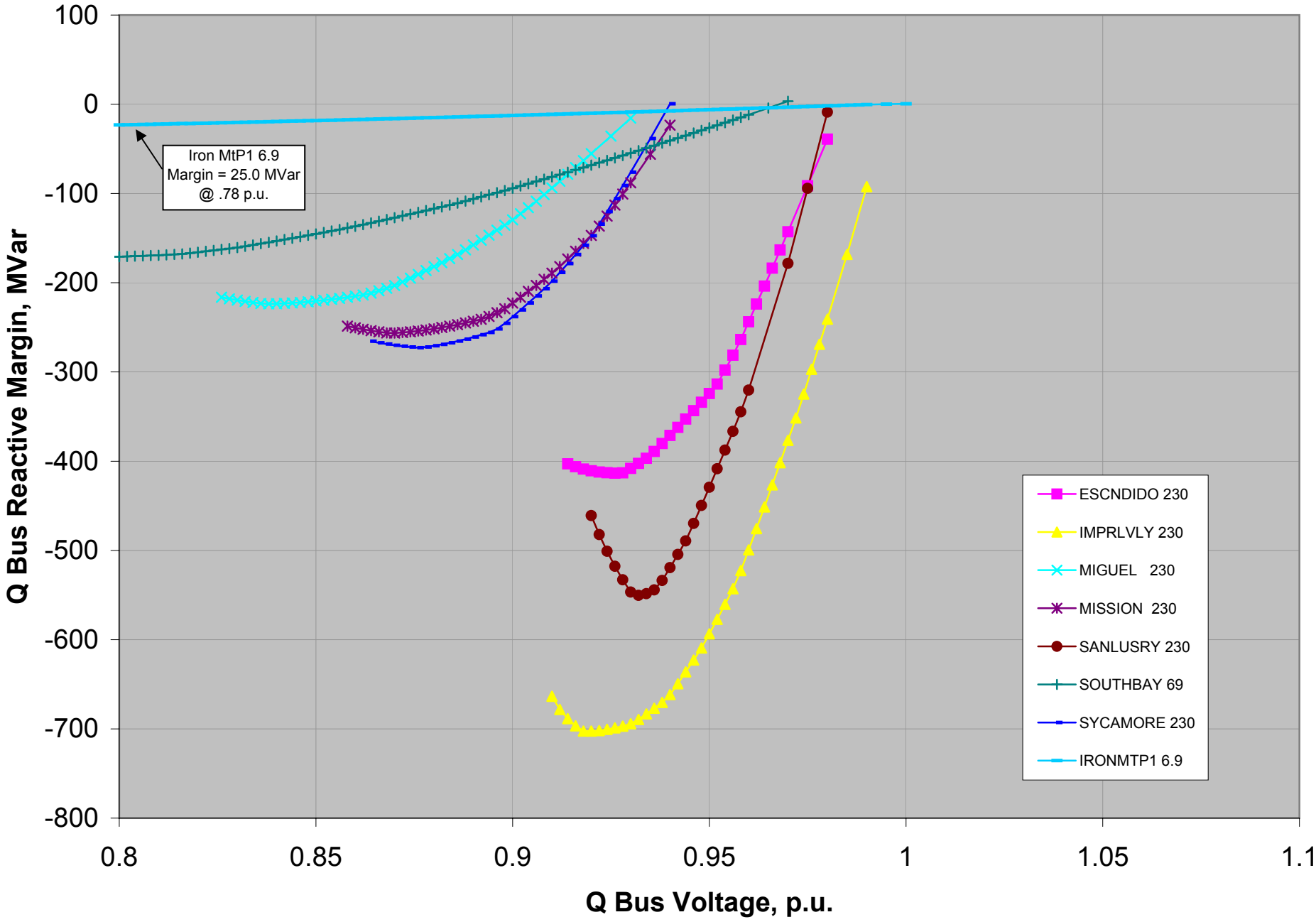
hs_rev4: HS Benchmark Case - No New Facilities, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_rev4_v2_ivml.nose Chart 2 - SCE



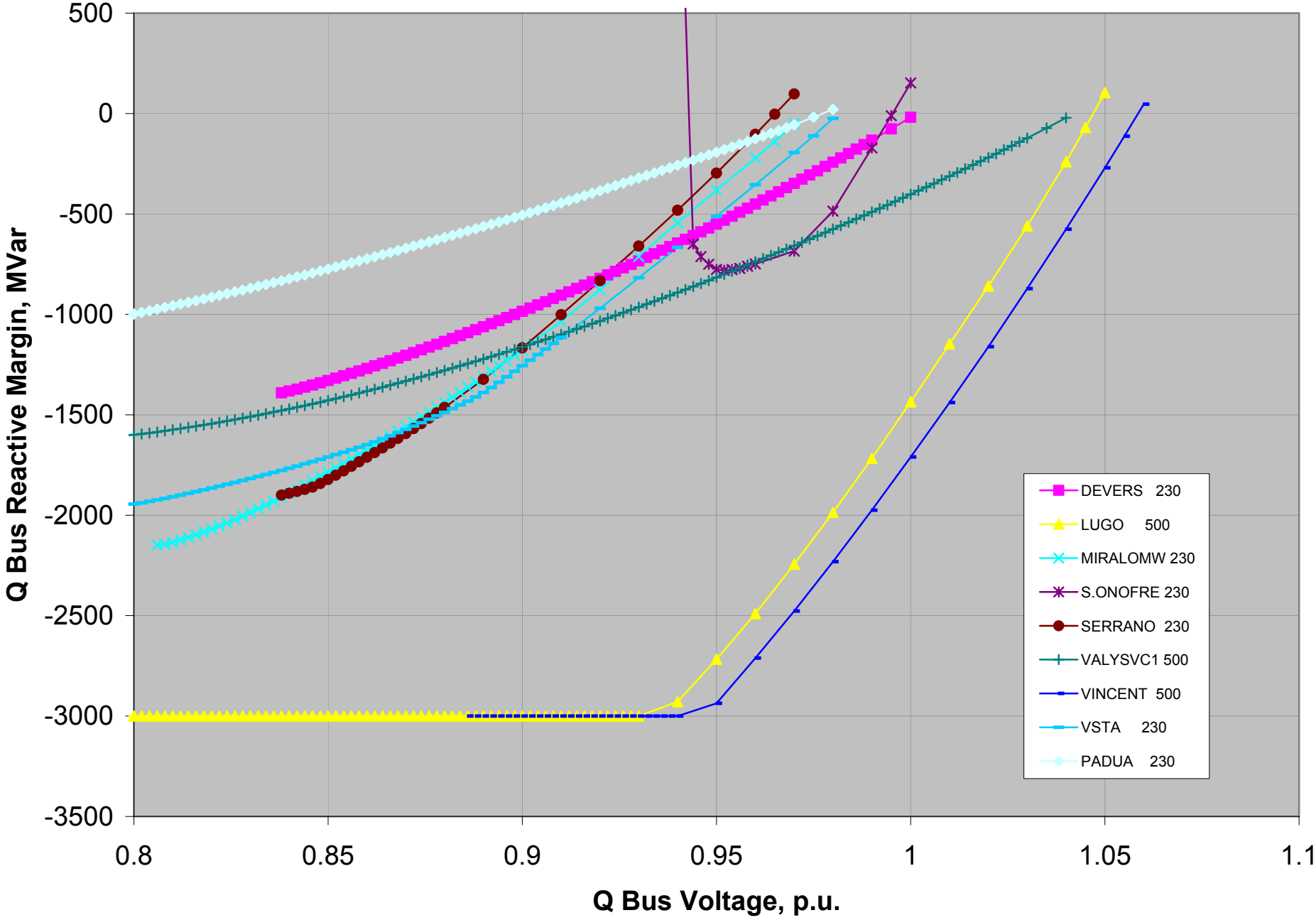
hs_rev4: HS Benchmark Case - No New Facilities, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_rev4_v2_ivml.nose Chart 3 - CFE & IID



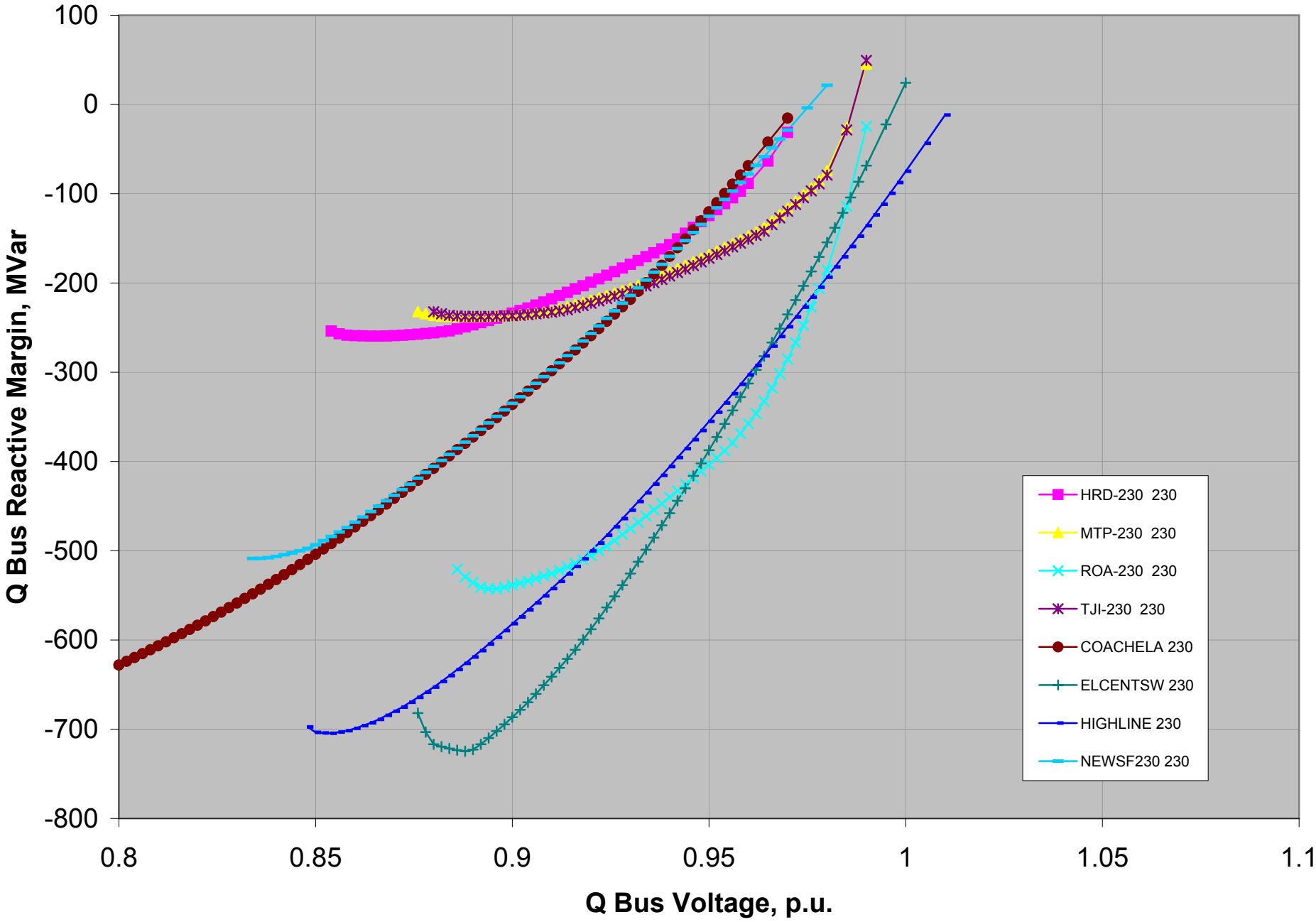
**hs_alt2d1: IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,**
**Source File = hs_alt2d1_s1_v2_ivml.nose Chart 1 - SDG&E**



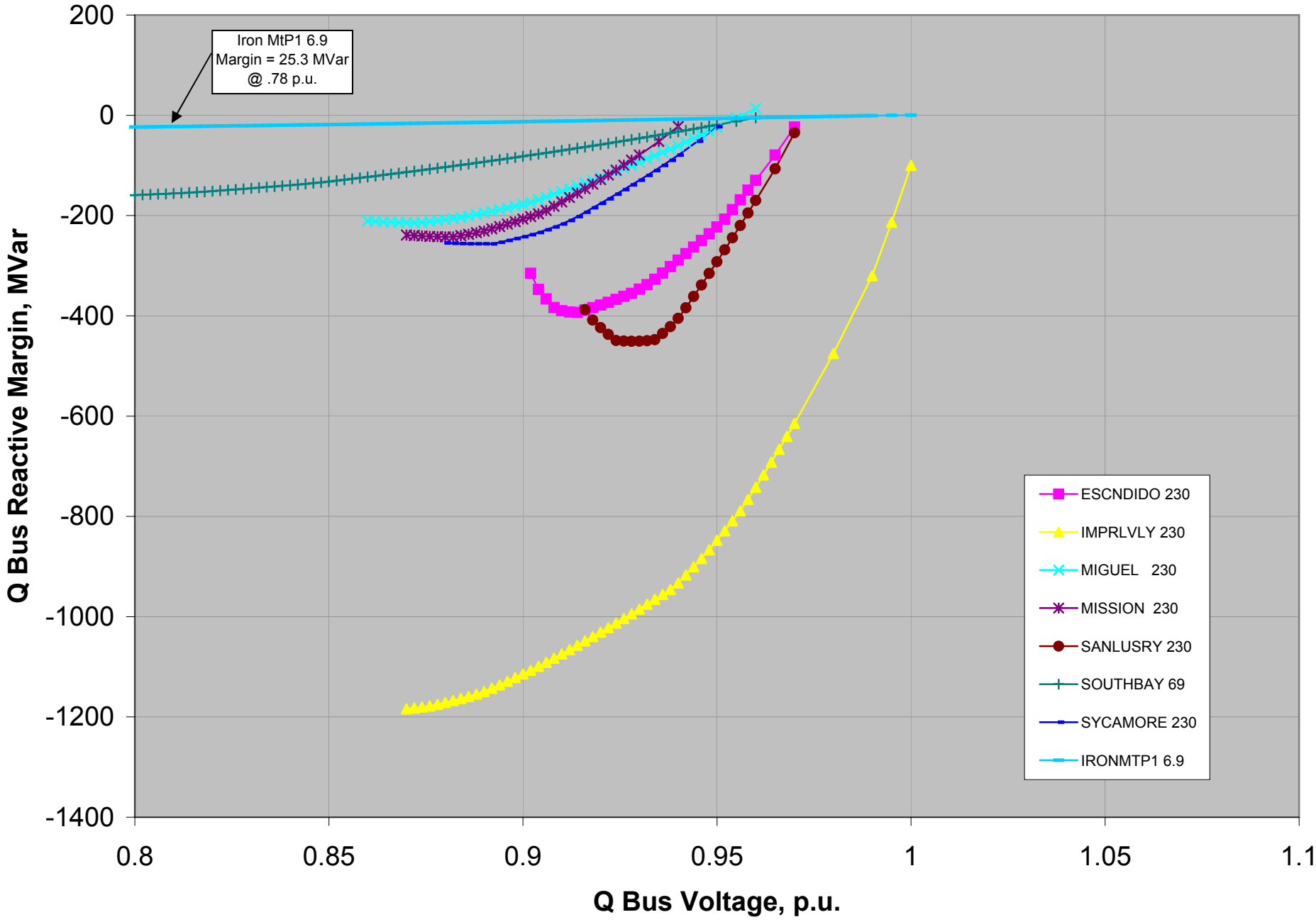
hs_alt2d1: IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_alt2d1_s1_v2_ivml.nose Chart 2 - SCE



hs_alt2d1: IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_alt2d1_s1_v2_ivml.nose Chart 3 - CFE & IID



hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_alt3bd1_s1_v2_ivml_VCaps.nose Chart 1 - SDG&E



hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
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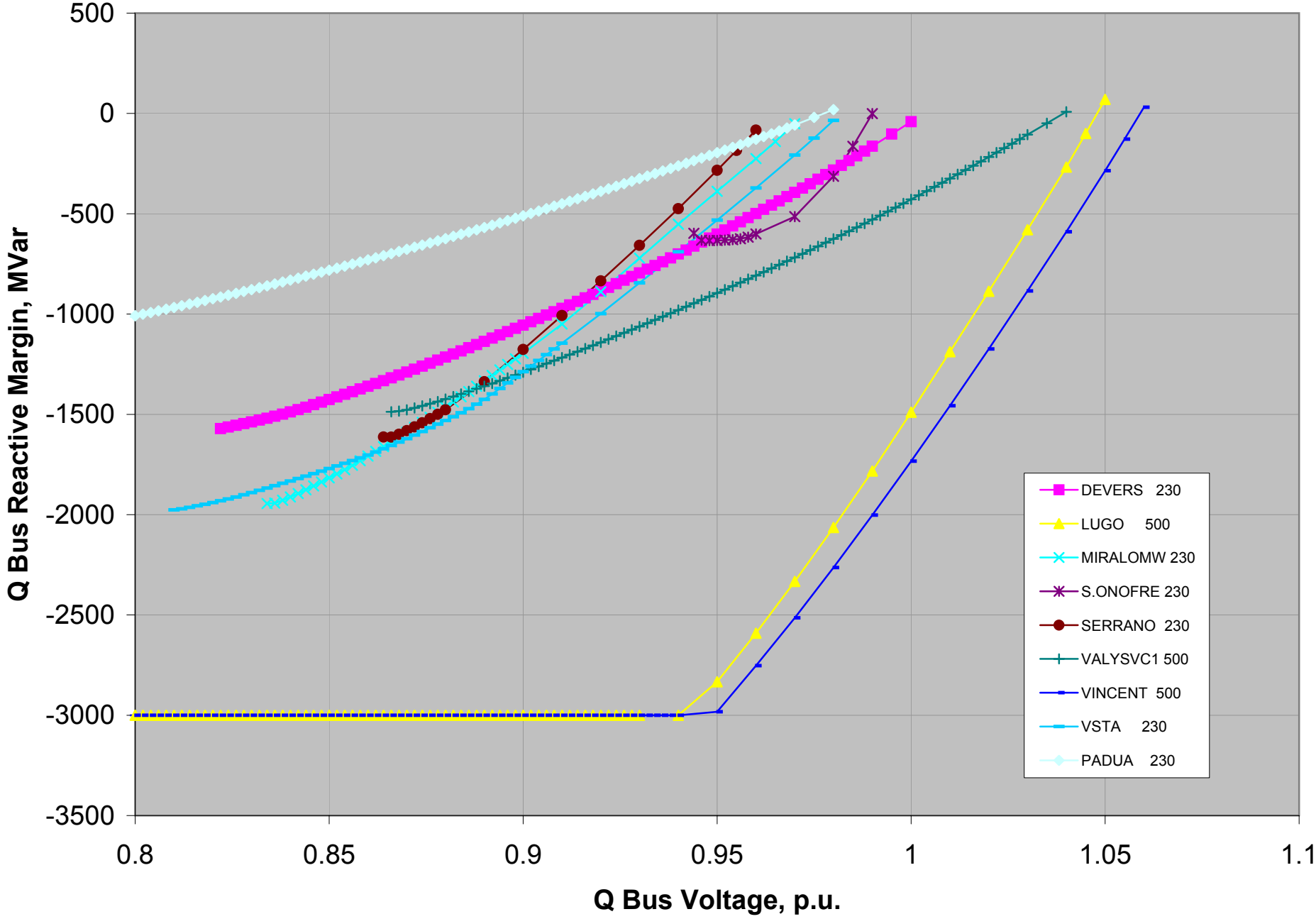
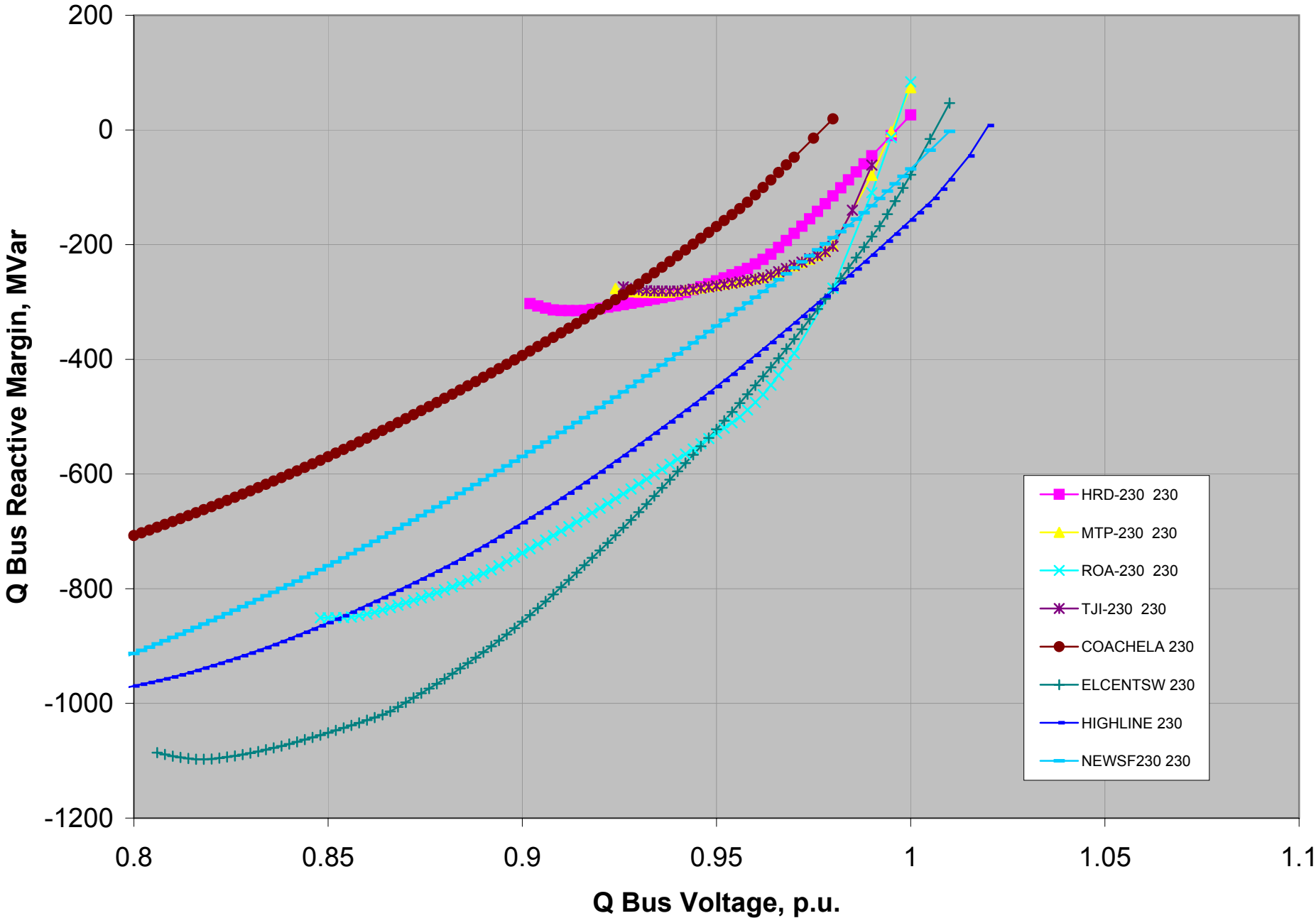
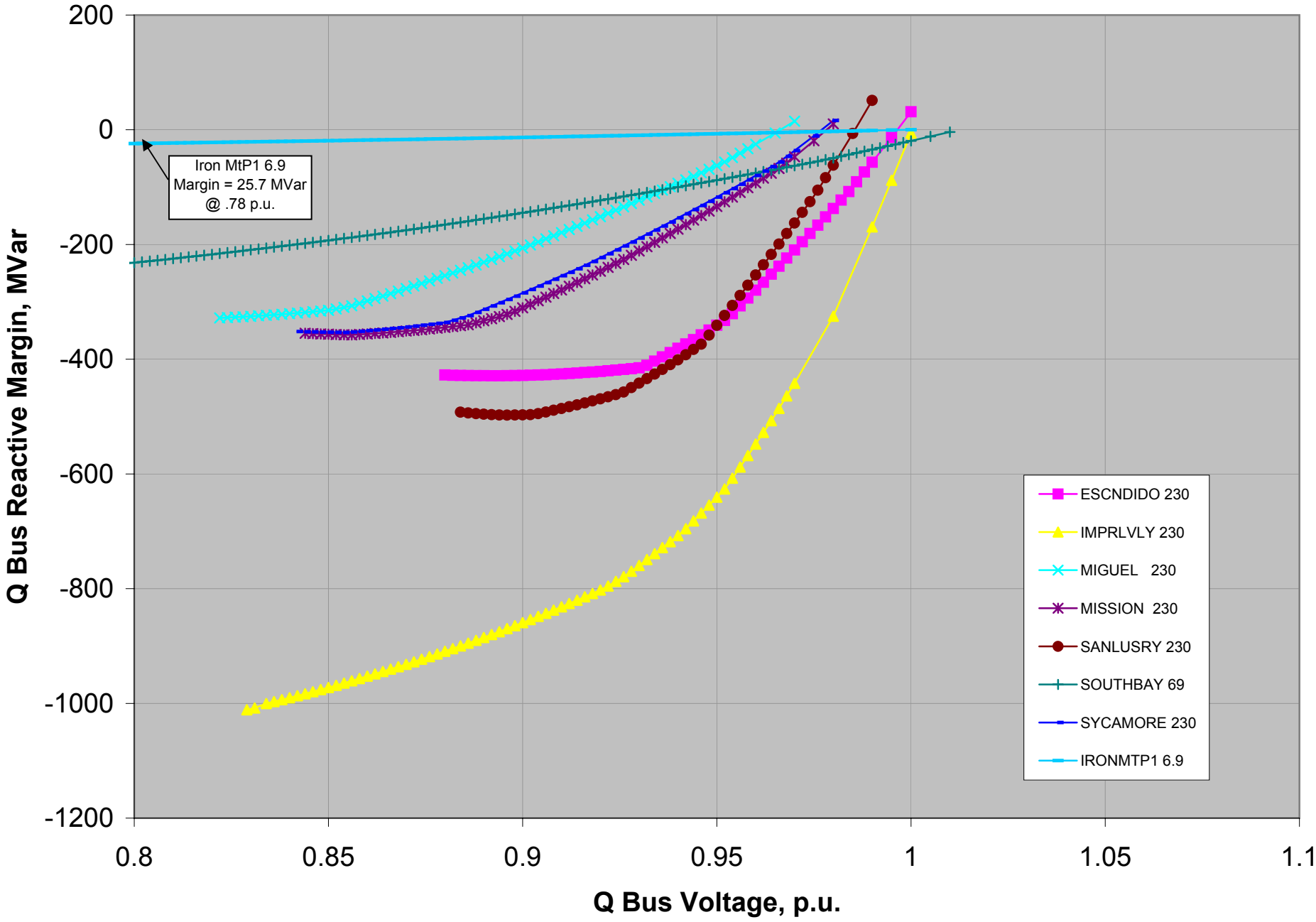


hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
Source File = hs_alt3bd1_s1_v2_ivml_VCaps.nose Chart 3 - CFE & IID



la_rev5: LA Benchmark Case - No New Facilities, Outage: Imperial Valley - Miguel 500kV,
Source File = la_rev5_v2_ivml.nose Chart 1 - SDG&E



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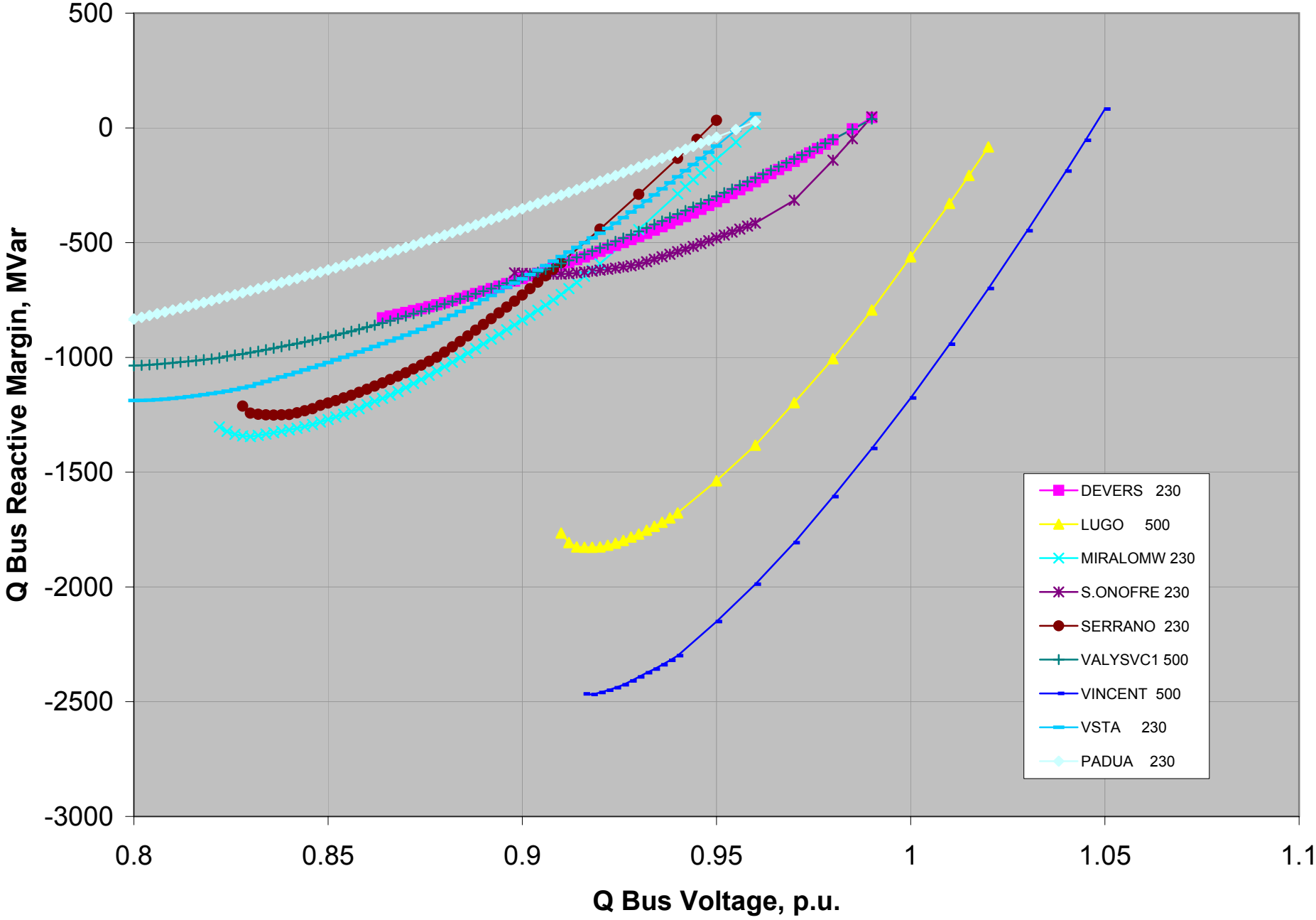
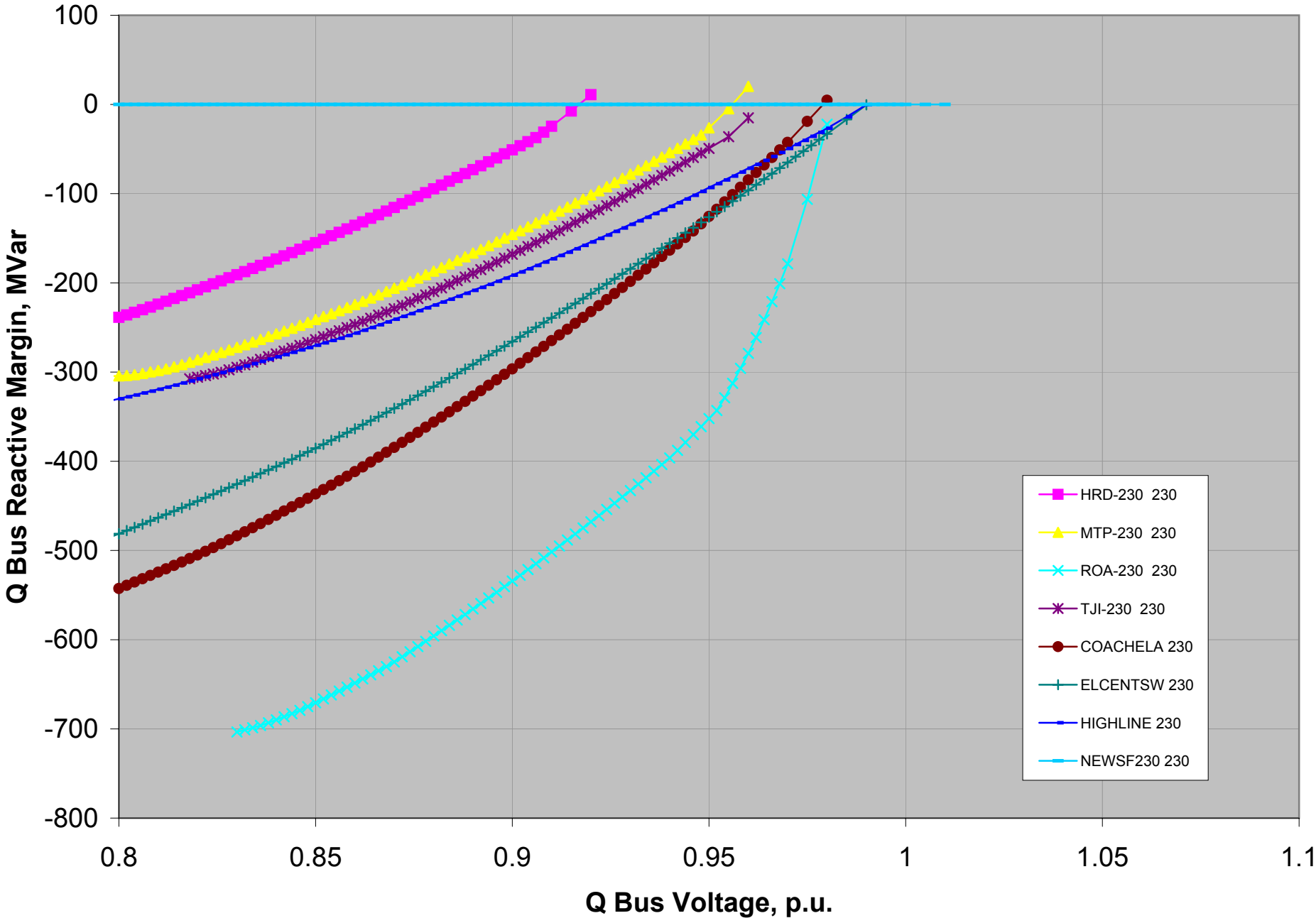
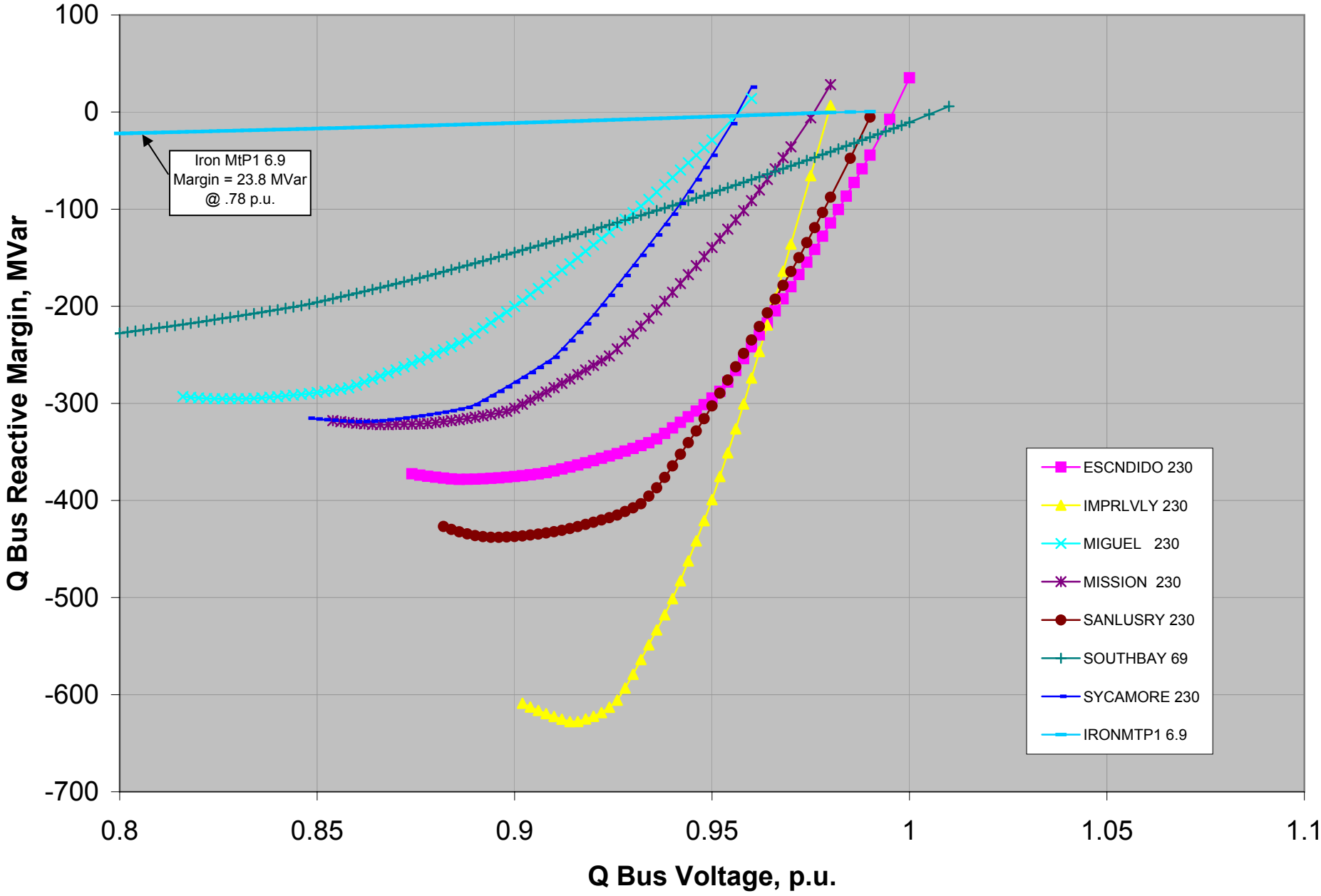


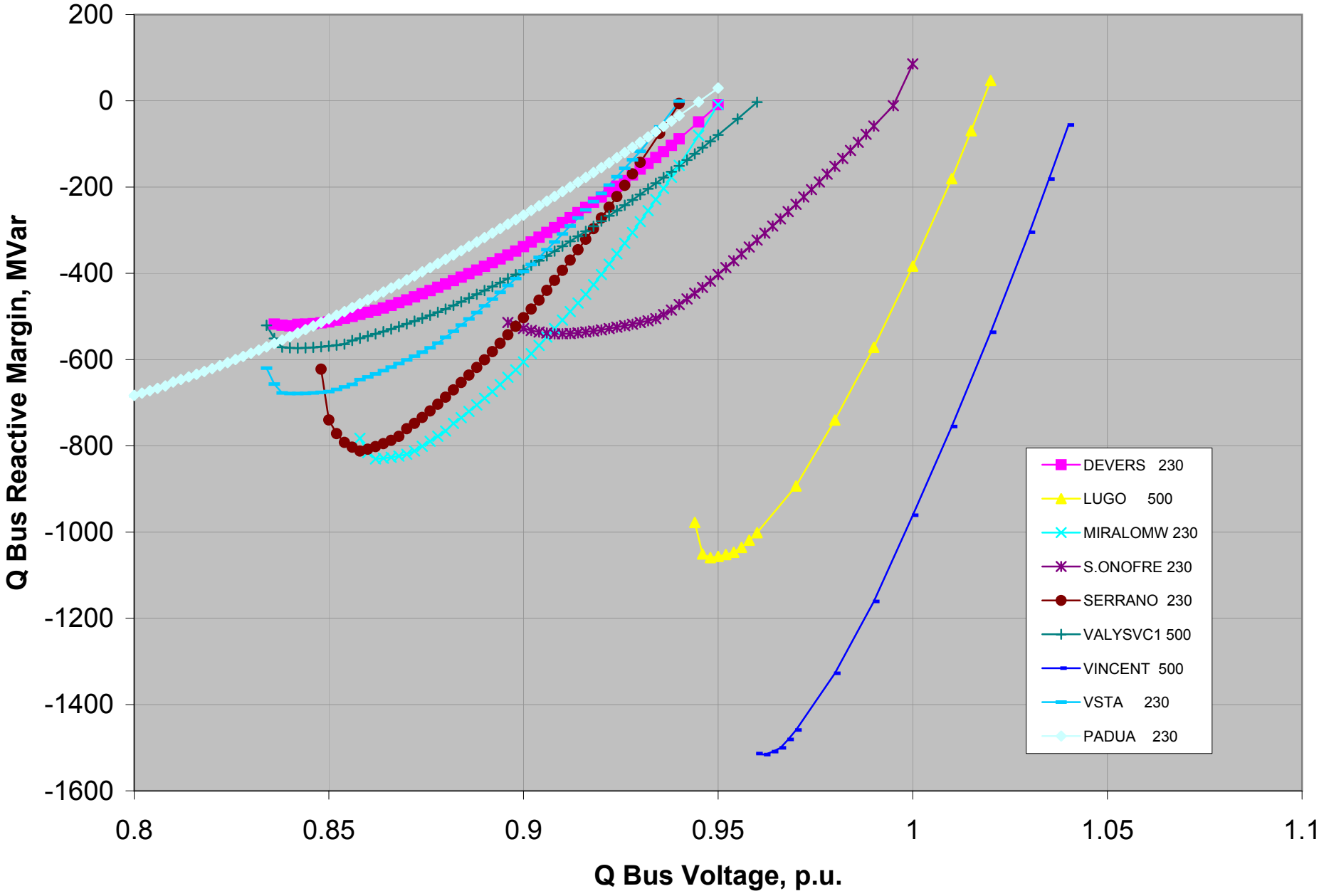
la_rev5: LA Benchmark Case - No New Facilities, Outage: Imperial Valley - Miguel 500kV,
Source File = la_rev5_v2_ivml.nose Chart 3 - CFE & IID



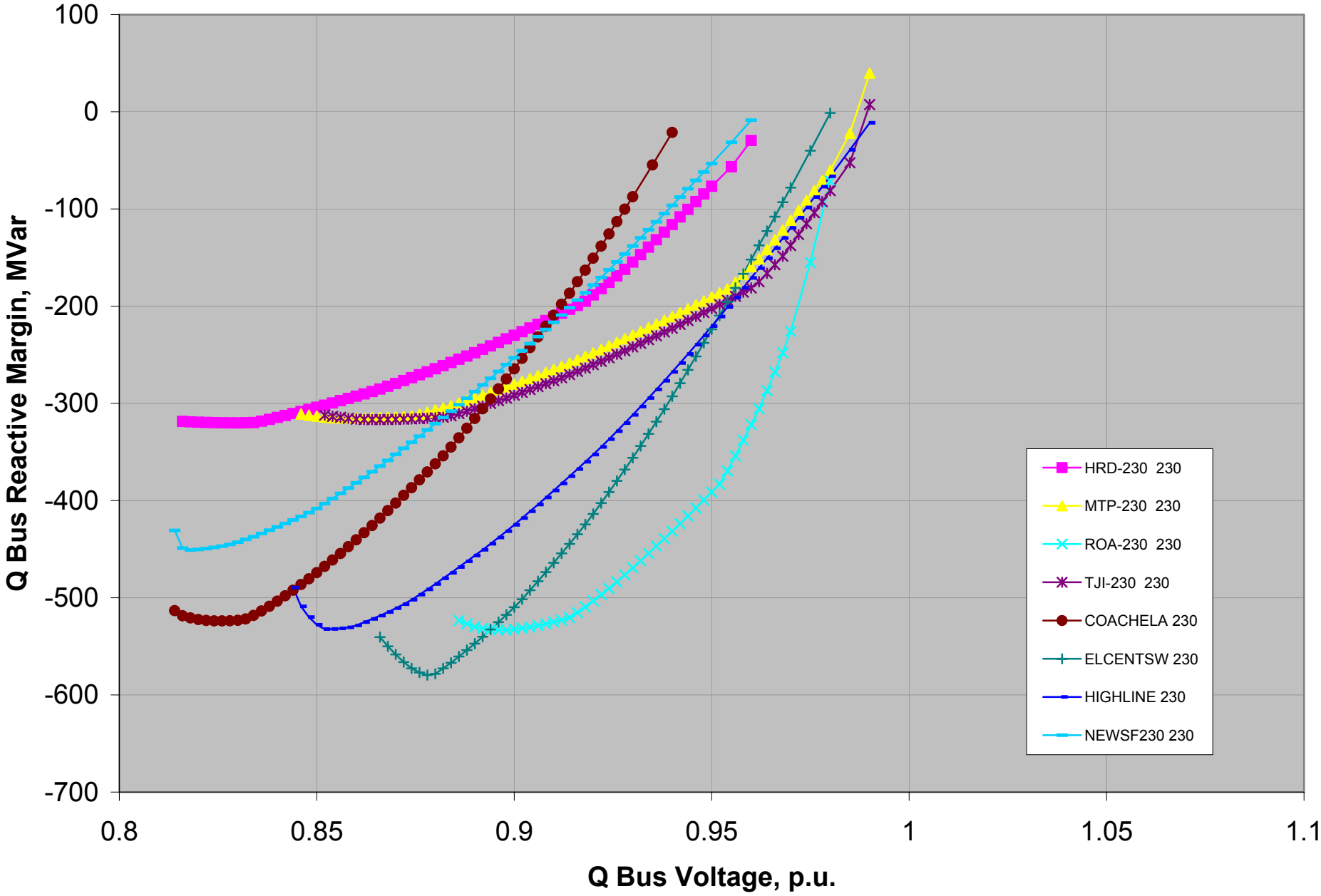
**la_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,**
**Outage: Imperial Valley - Miguel 500kV,**
**Source File = la_alt2ad3_s1_v2_ivml.nose Chart 1 - SDG&E**

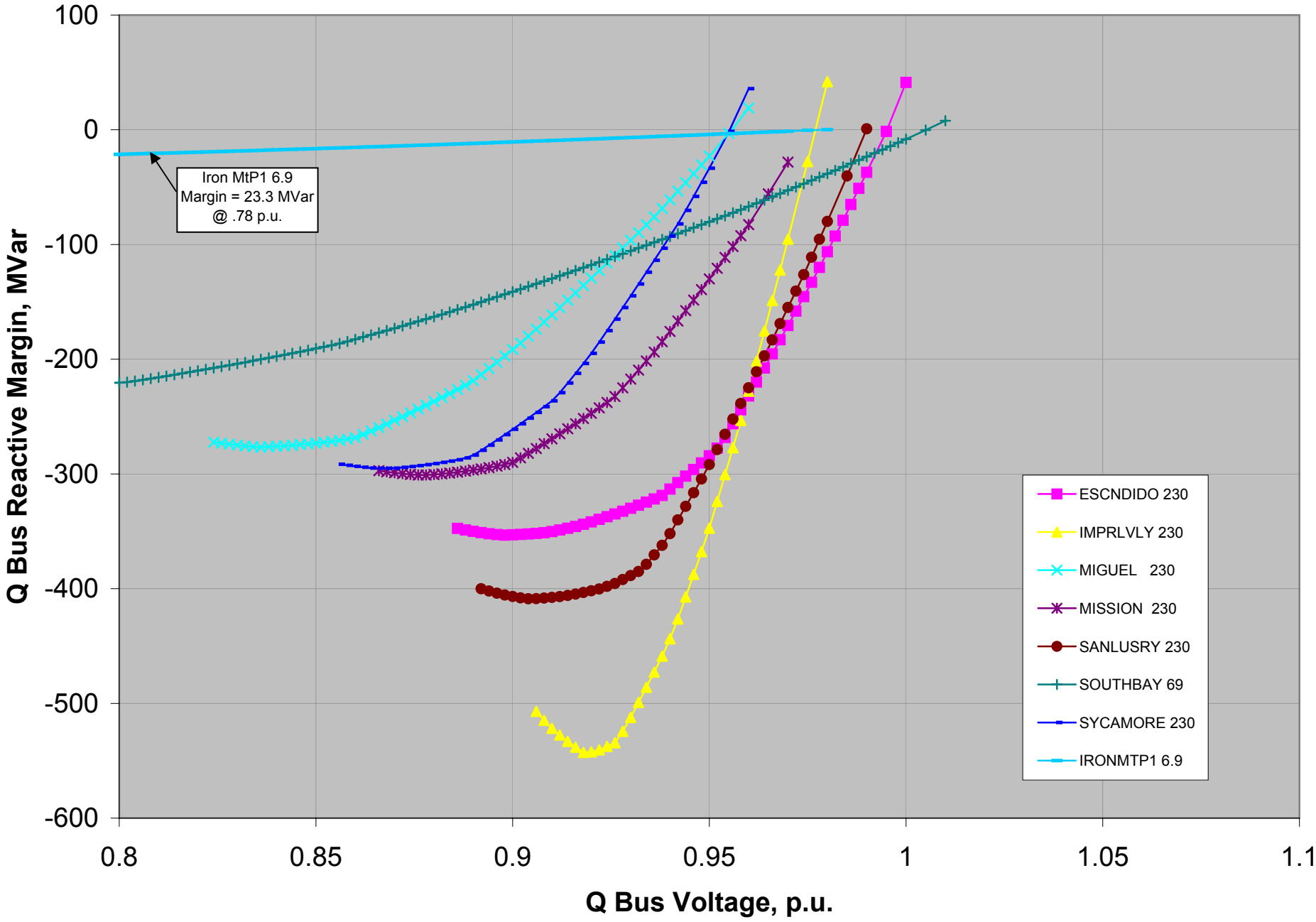


**la_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,**
**Outage: Imperial Valley - Miguel 500kV,**
**Source File = la_alt2ad3_s1_v2_ivml.nose Chart 2 - SCE**

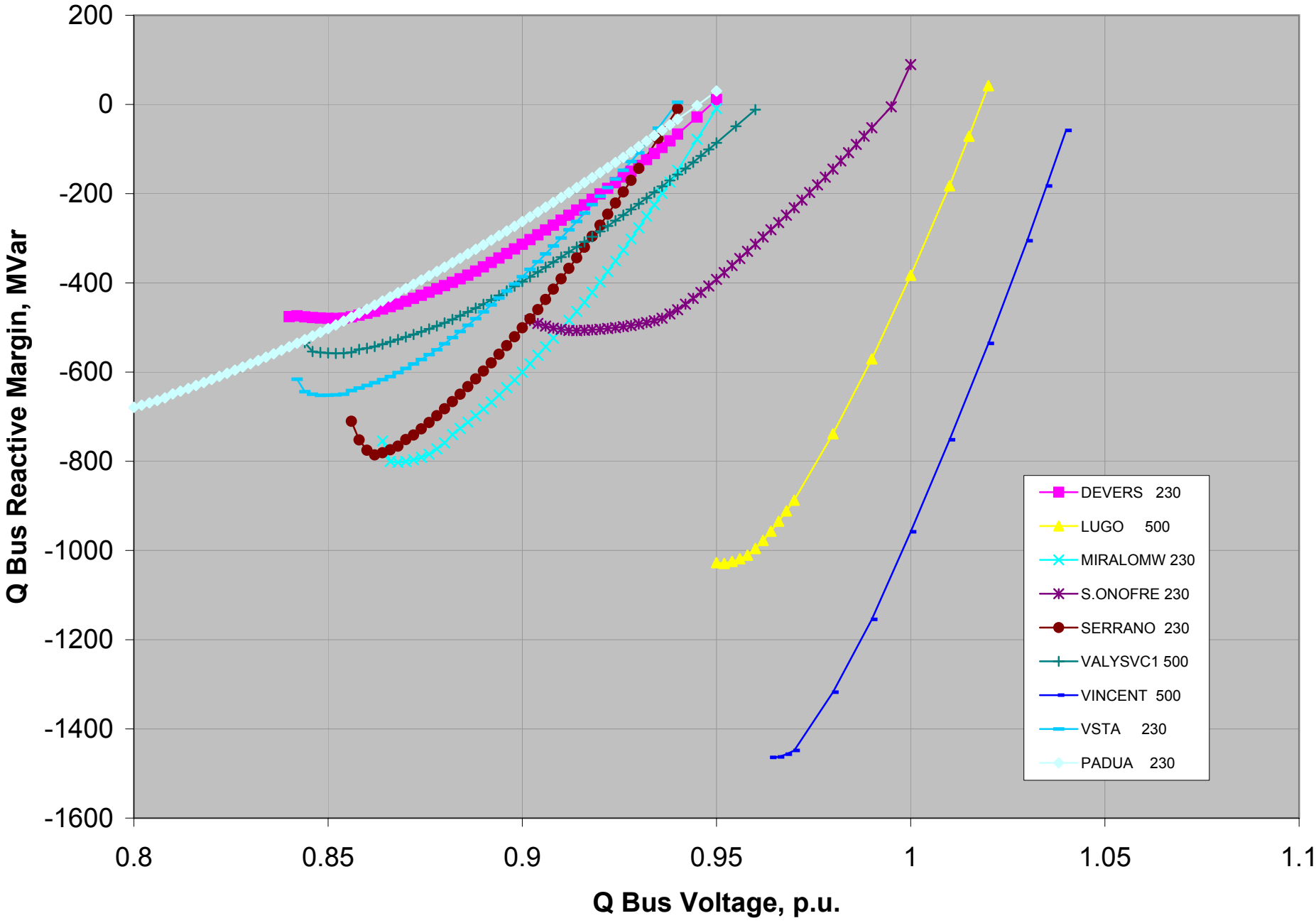


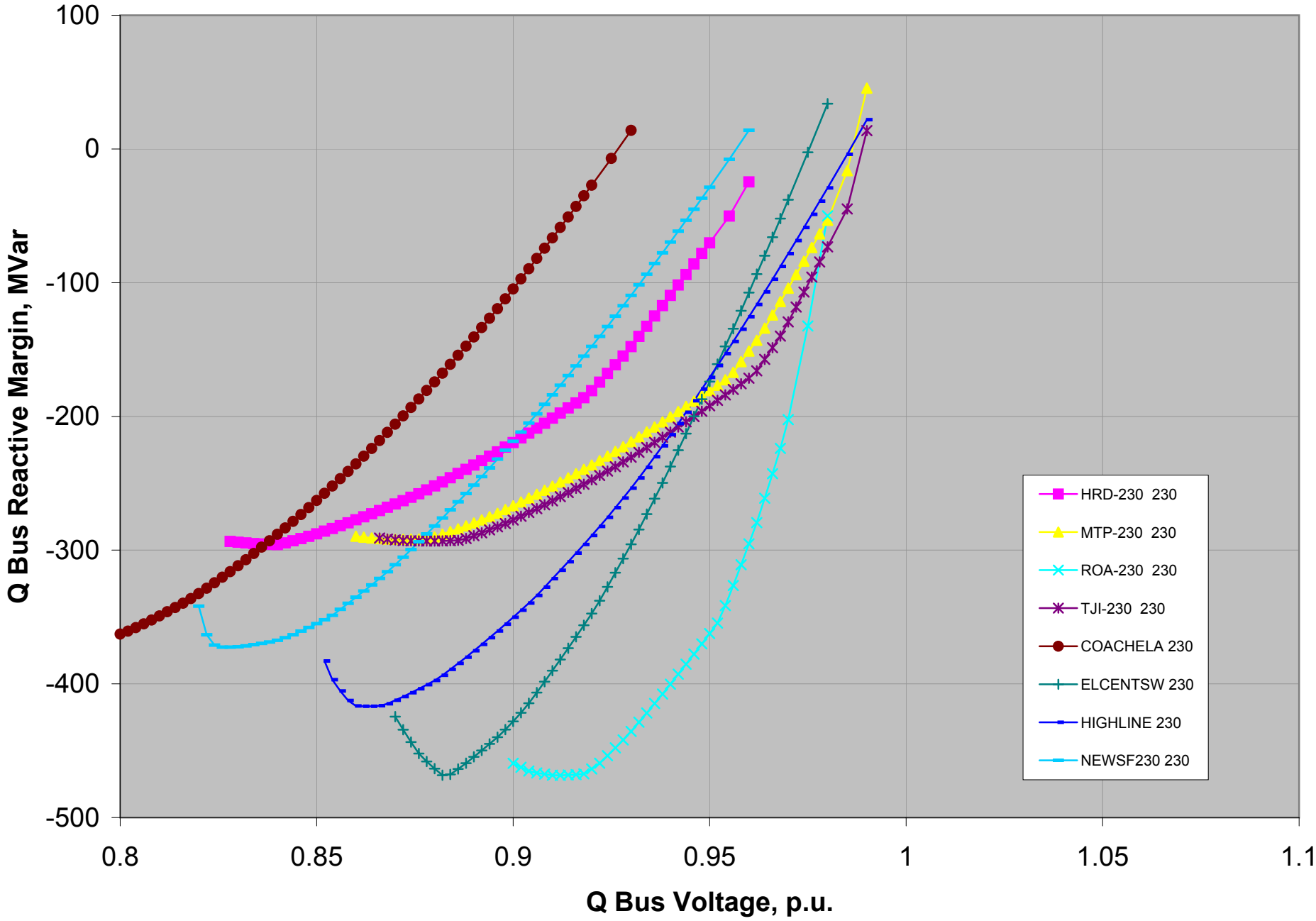
la_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,
Outage: Imperial Valley - Miguel 500kV,
Source File = la_alt2ad3_s1_v2_ivml.nose Chart 3 - CFE & IID

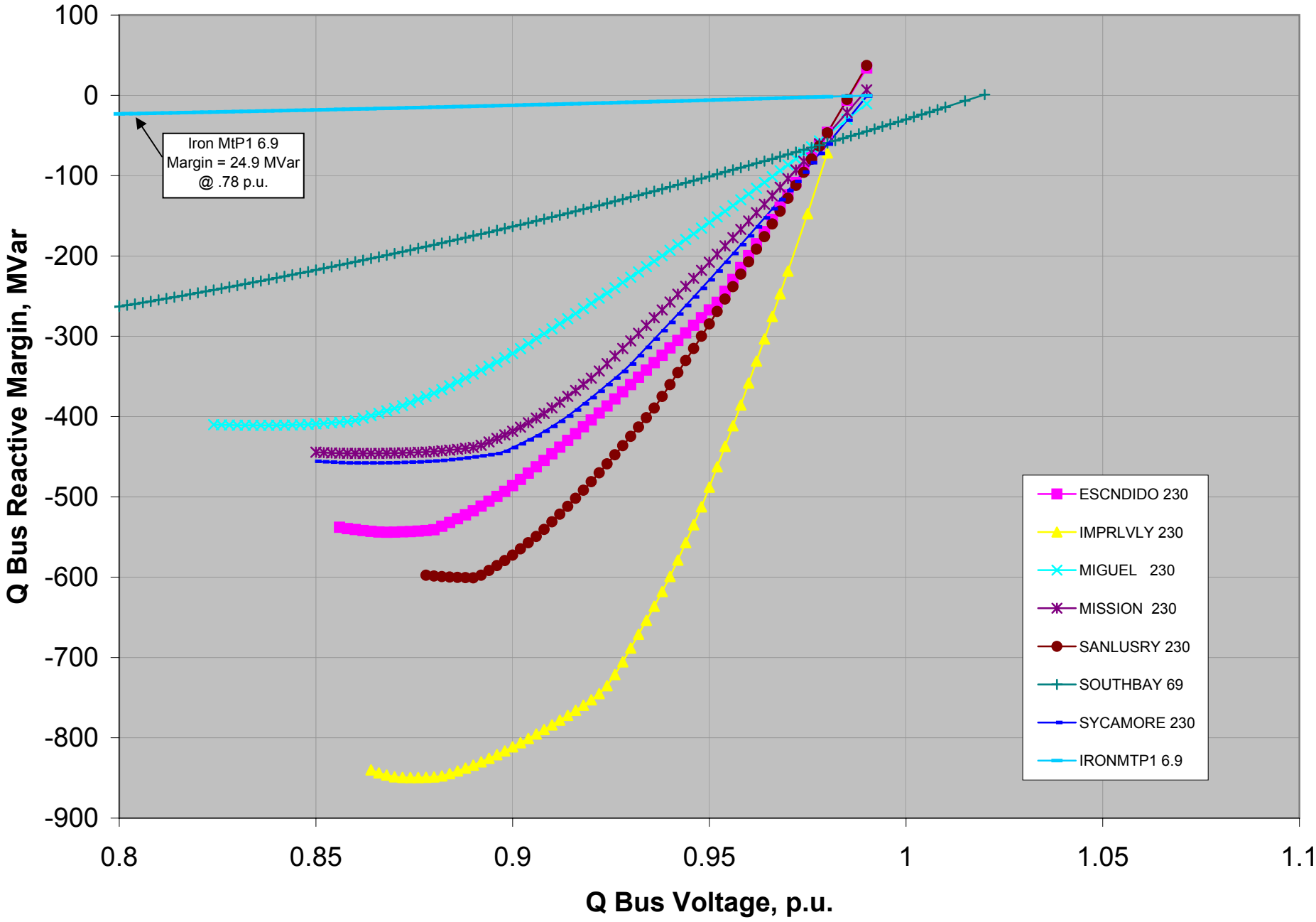



la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,
Source File = la_alt2d3_s1_v2_ivml.nose Chart 1 - SDG&E
Iron MtP1 6.9
Margin = 23.3 MVar
@ .78 p.u.
ESCNDIDO 230
IMPRLVLY 230
MIGUEL 230
MISSION 230
SANLUSRY 230
SOUTHBAY 69
SYCAMORE 230
IRONMTP1 6.9
Q Bus Reactive Margin, MVar
100
0
-100
-200
-300
-400
-500
-600
0.8
0.85
0.9
0.95
1
1.05
1.1
Q Bus Voltage, p.u.

la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,
Source File = la_alt2d3_s1_v2_ivml.nose Chart 2 - SCE




la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Imperial Valley - Miguel 500kV,
Source File = la_alt2d3_s1_v2_ivml.nose Chart 3 - CFE & IID
Q Bus Reactive Margin, MVar
100
0
-100
-200
-300
-400
-500
0.8
0.85
0.9
0.95
1
1.05
1.1
Q Bus Voltage, p.u.
HRD-230 230
MTP-230 230
ROA-230 230
TJI-230 230
COACHELA 230
ELCENTSW 230
HIGHLINE 230
NEWSF230 230


la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
Source File = la_alt3bd3_s1_v2_ivml_VCaps.nose Chart 1 - SDG&E
Iron MtP1 6.9
Margin = 24.9 MVar
@ .78 p.u.
Q Bus Reactive Margin, MVar
Q Bus Voltage, p.u.
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
0.8
0.85
0.9
0.95
1
1.05
1.1
ESCNDIDO 230
IMPRLVLY 230
MIGUEL 230
MISSION 230
SANLUSRY 230
SOUTHBAY 69
SYCAMORE 230
IRONMTP1 6.9

la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
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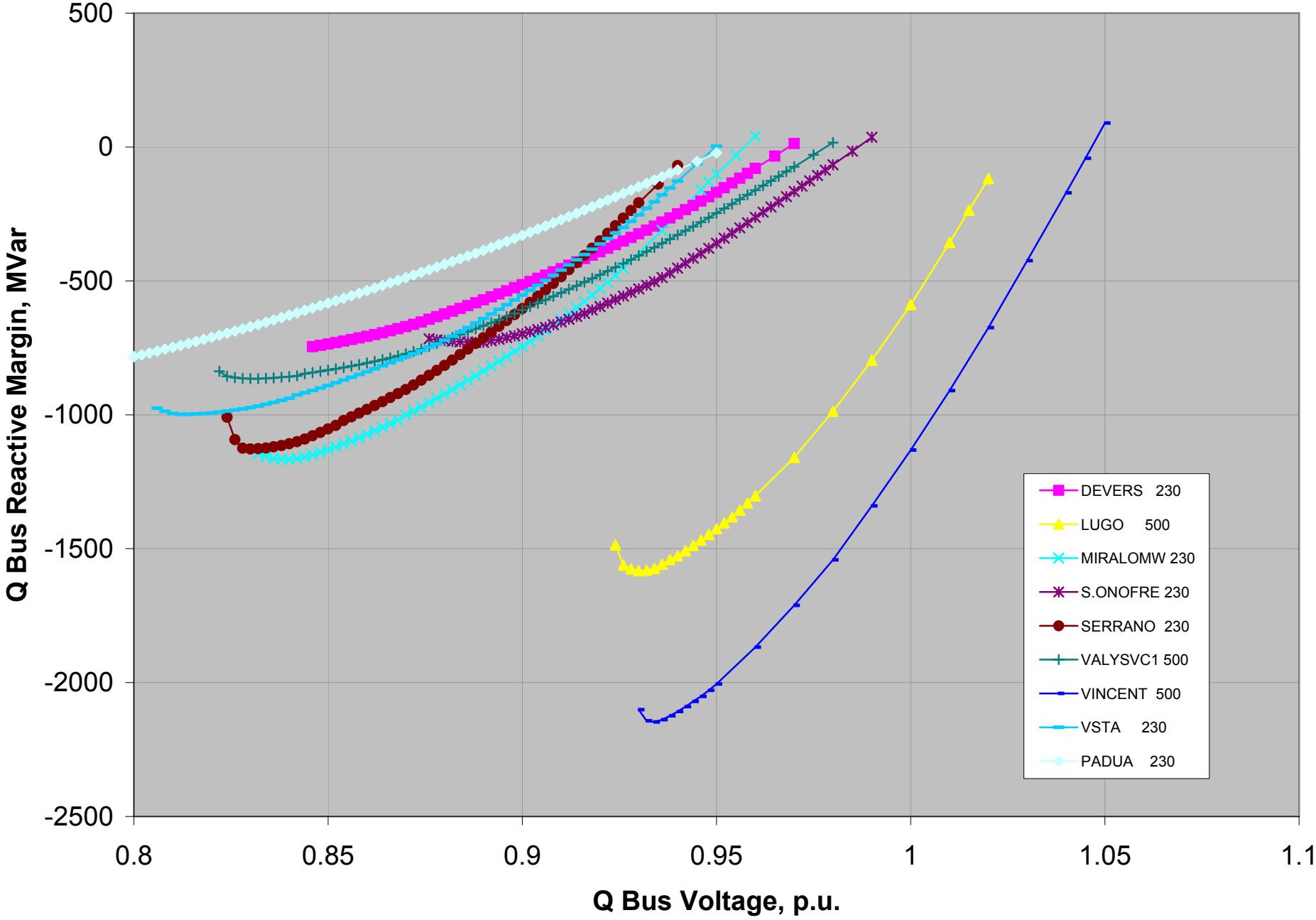

la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Imperial Valley - Miguel 500kV,
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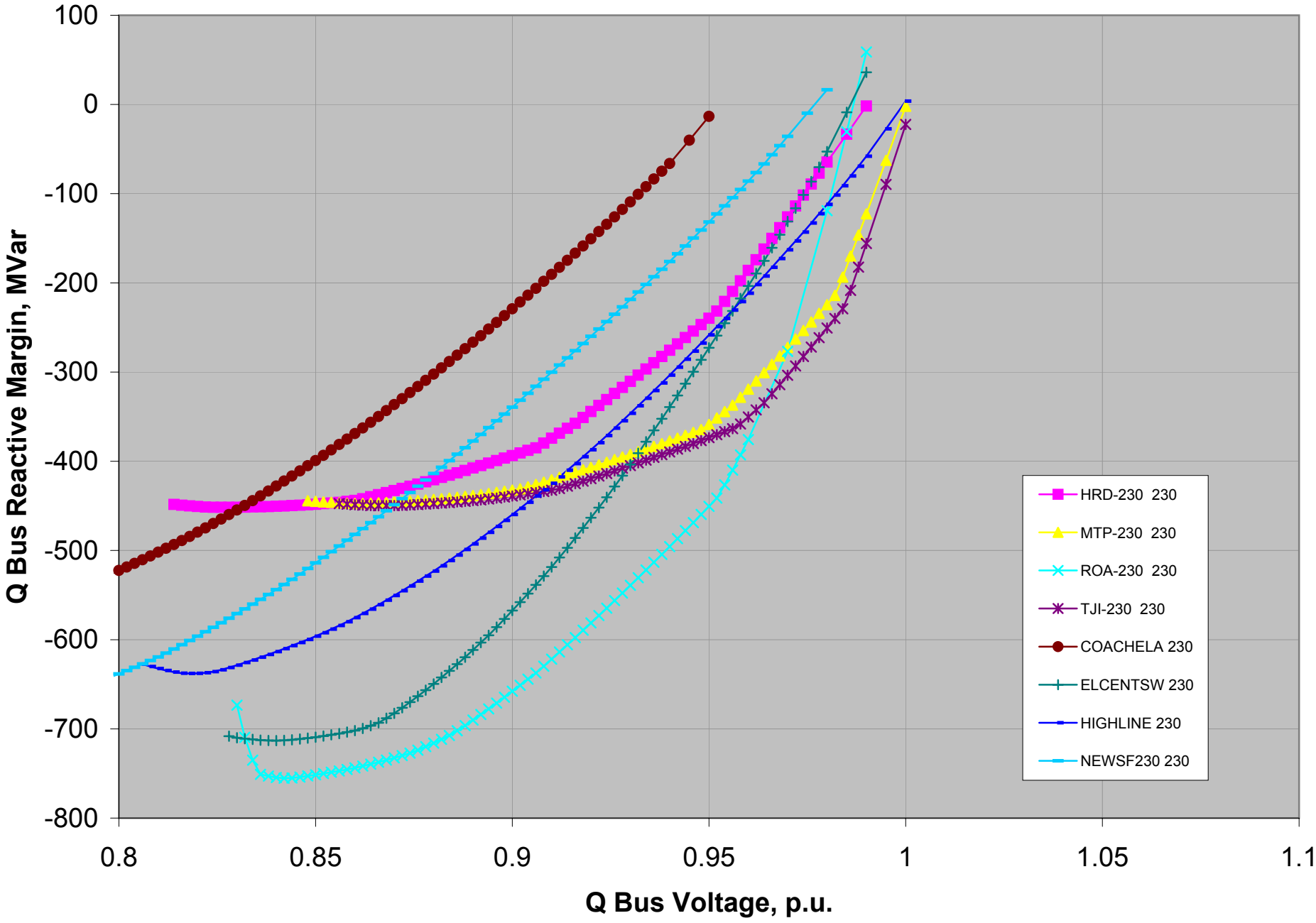

hs_rev4: HS Benchmark Case - No New Facilities, Outage: Devers - Valley SC 500kV,
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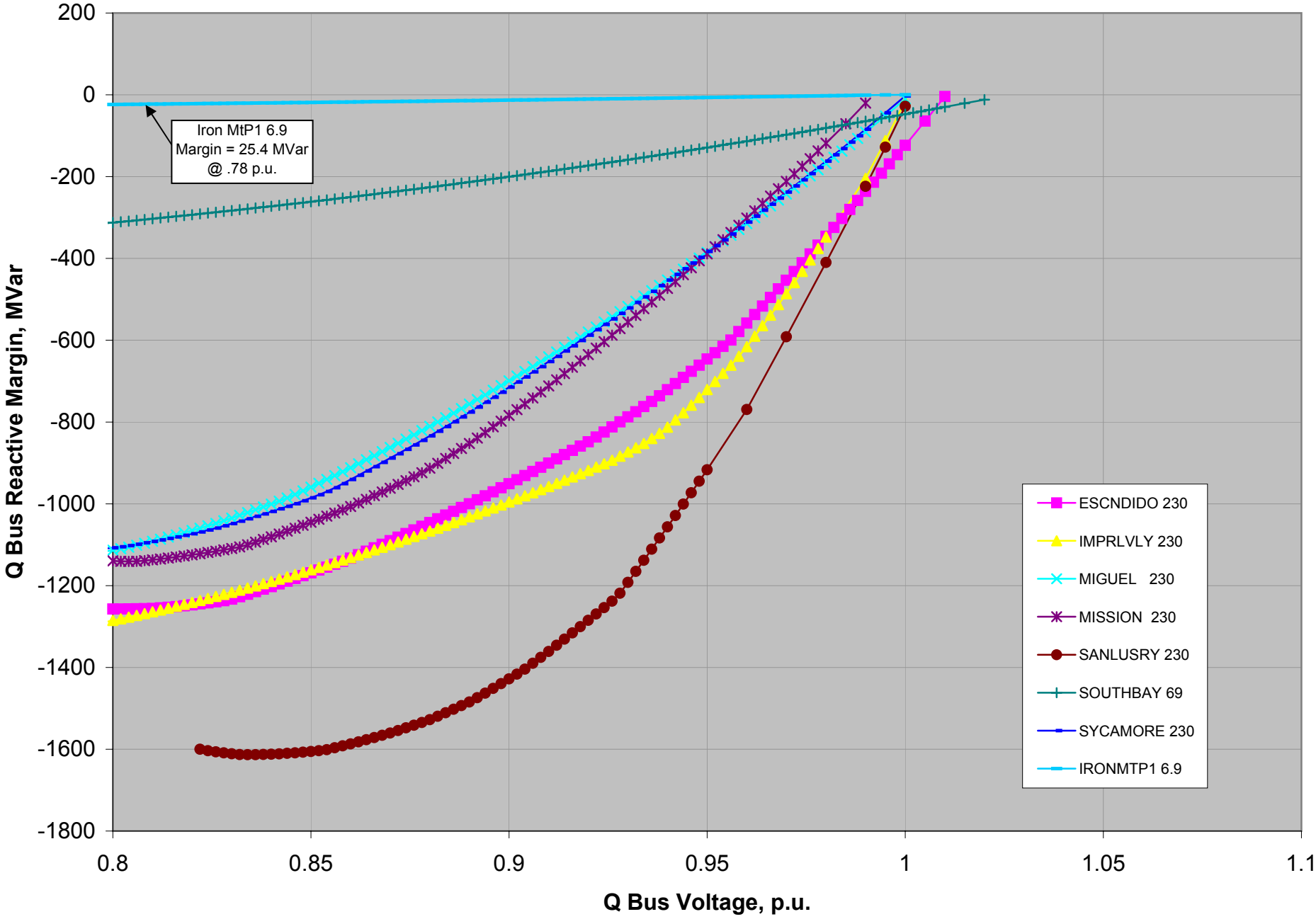

hs_rev4: HS Benchmark Case - No New Facilities, Outage: Devers - Valley SC 500kV,
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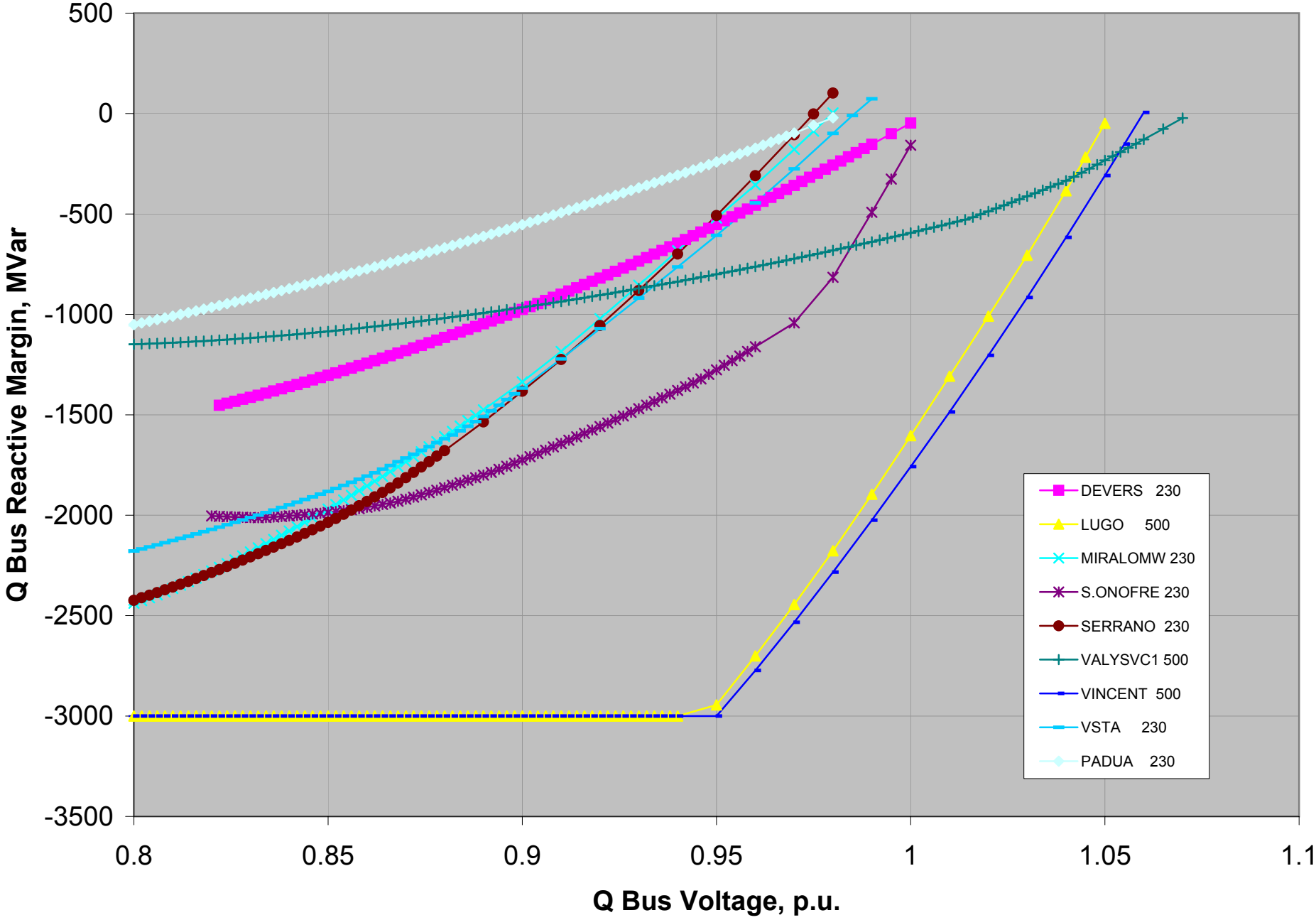

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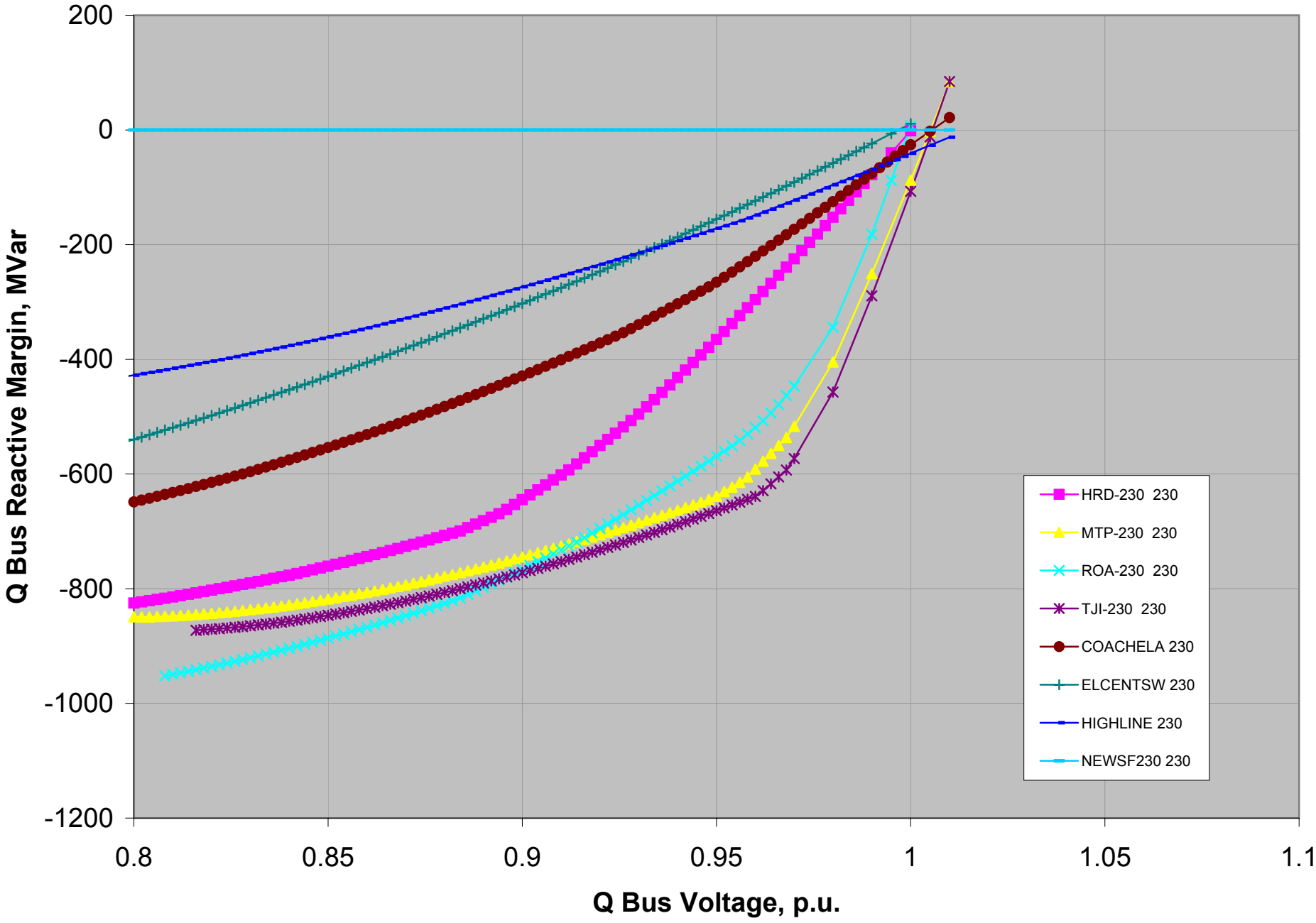
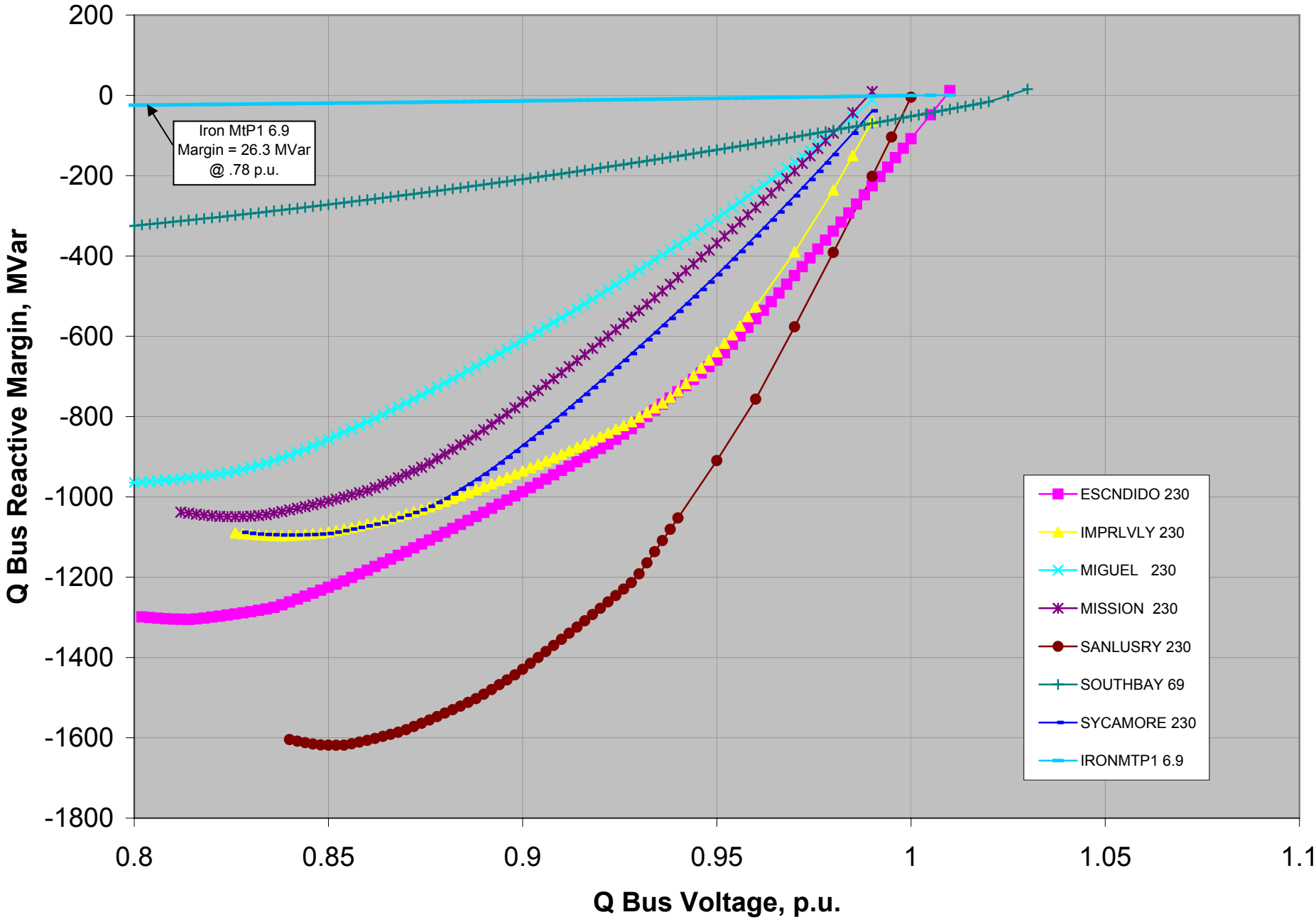


**hs_alt2d1: IV - New San Filipe - CentralX 500, Outage: Devers - Valley SC 500kV**
**Source file = hs_alt2d1_s1_v2_deva.nose Chart 1 - SDG&E**



hs_alt2d1: IV - New San Filipe - CentralX 500,  Outage:  Devers - Valley SC 500kV
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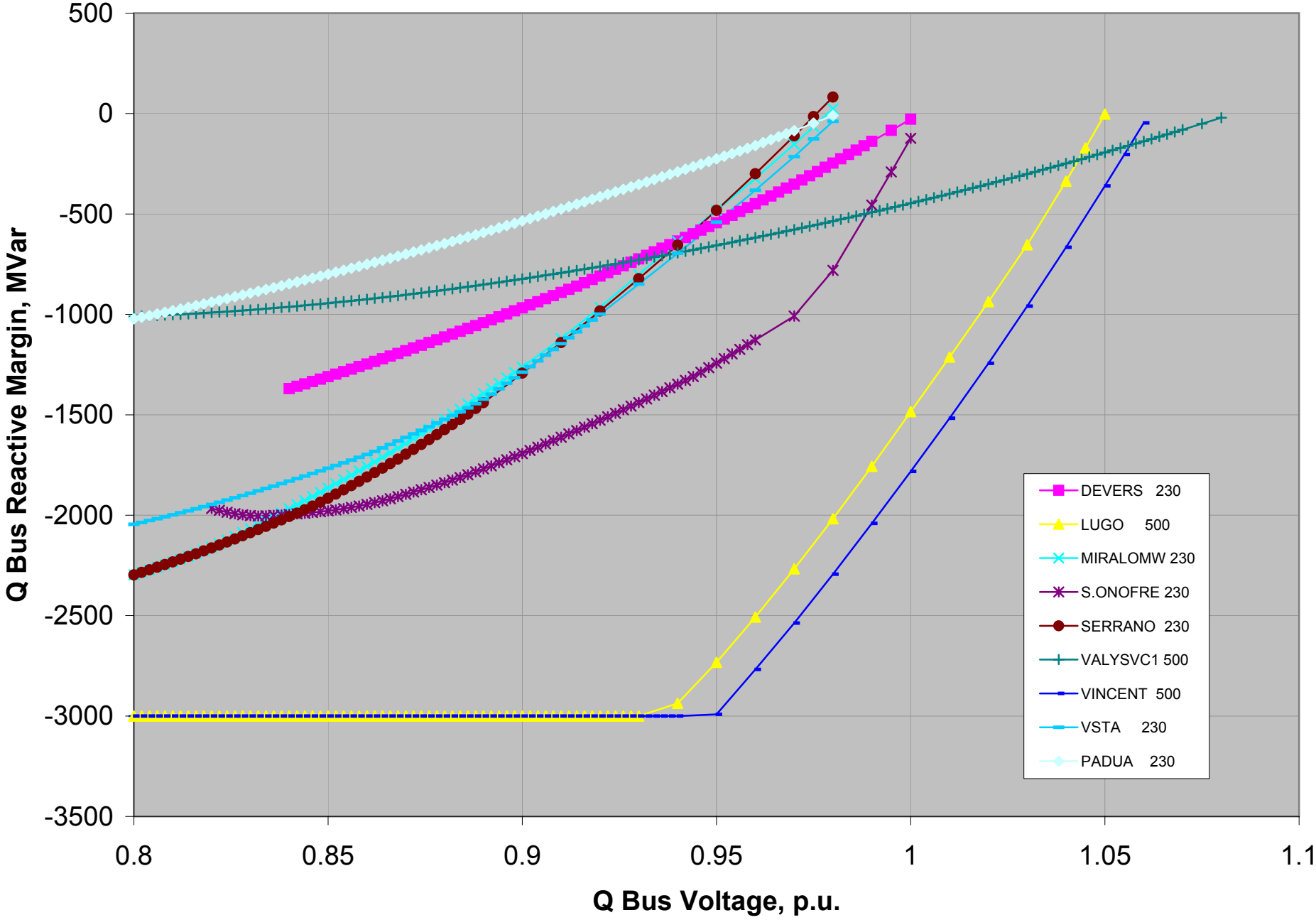
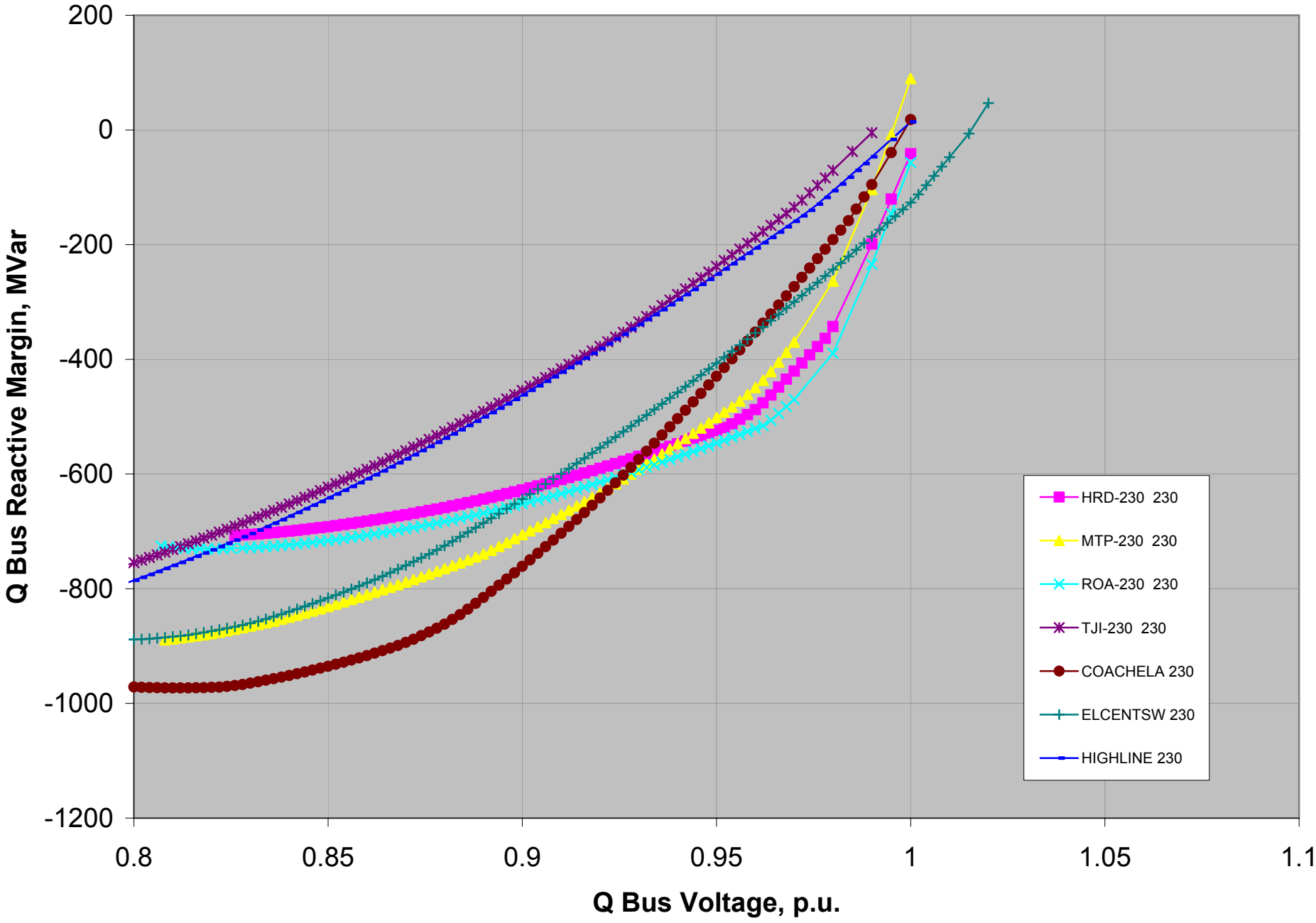
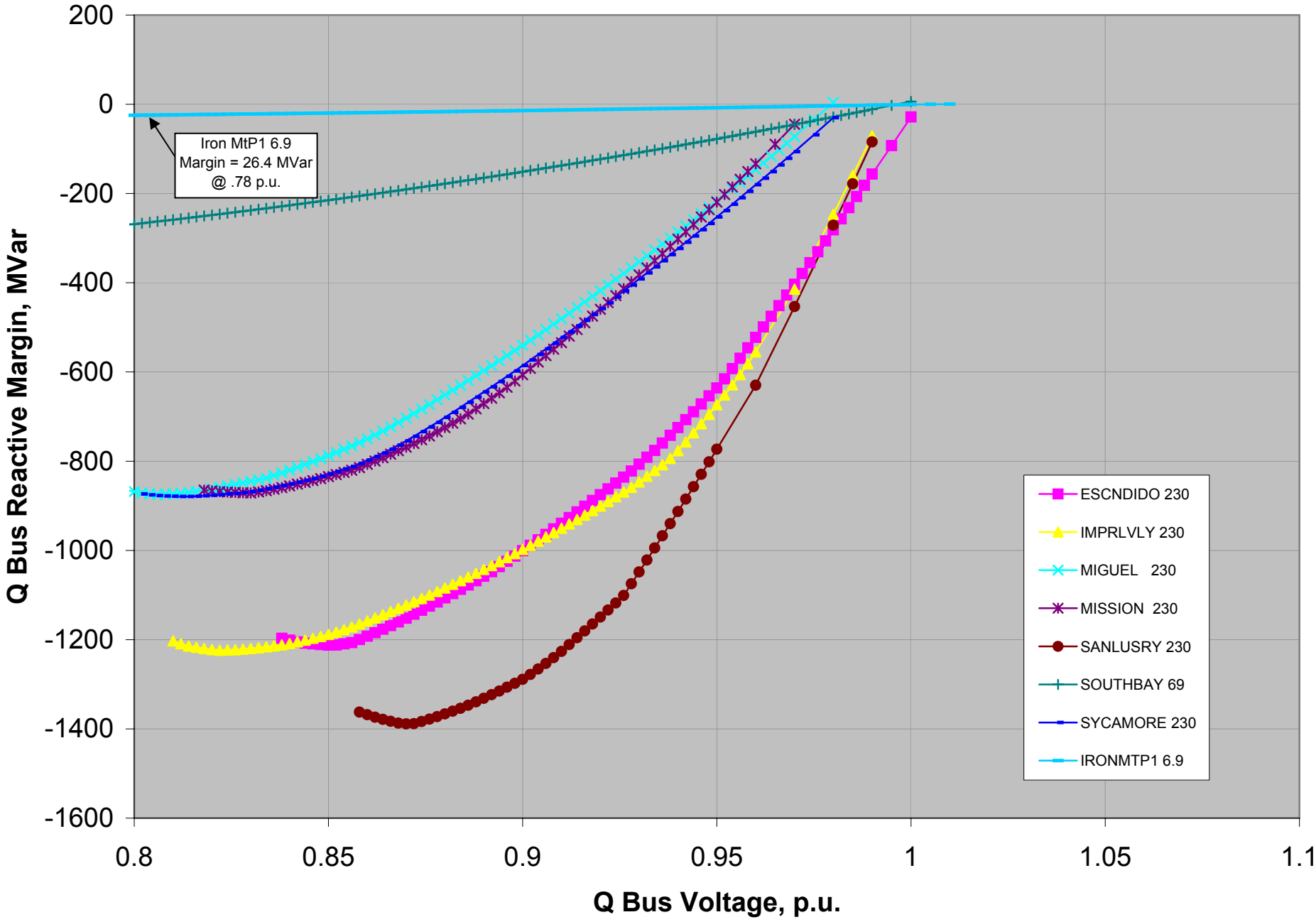


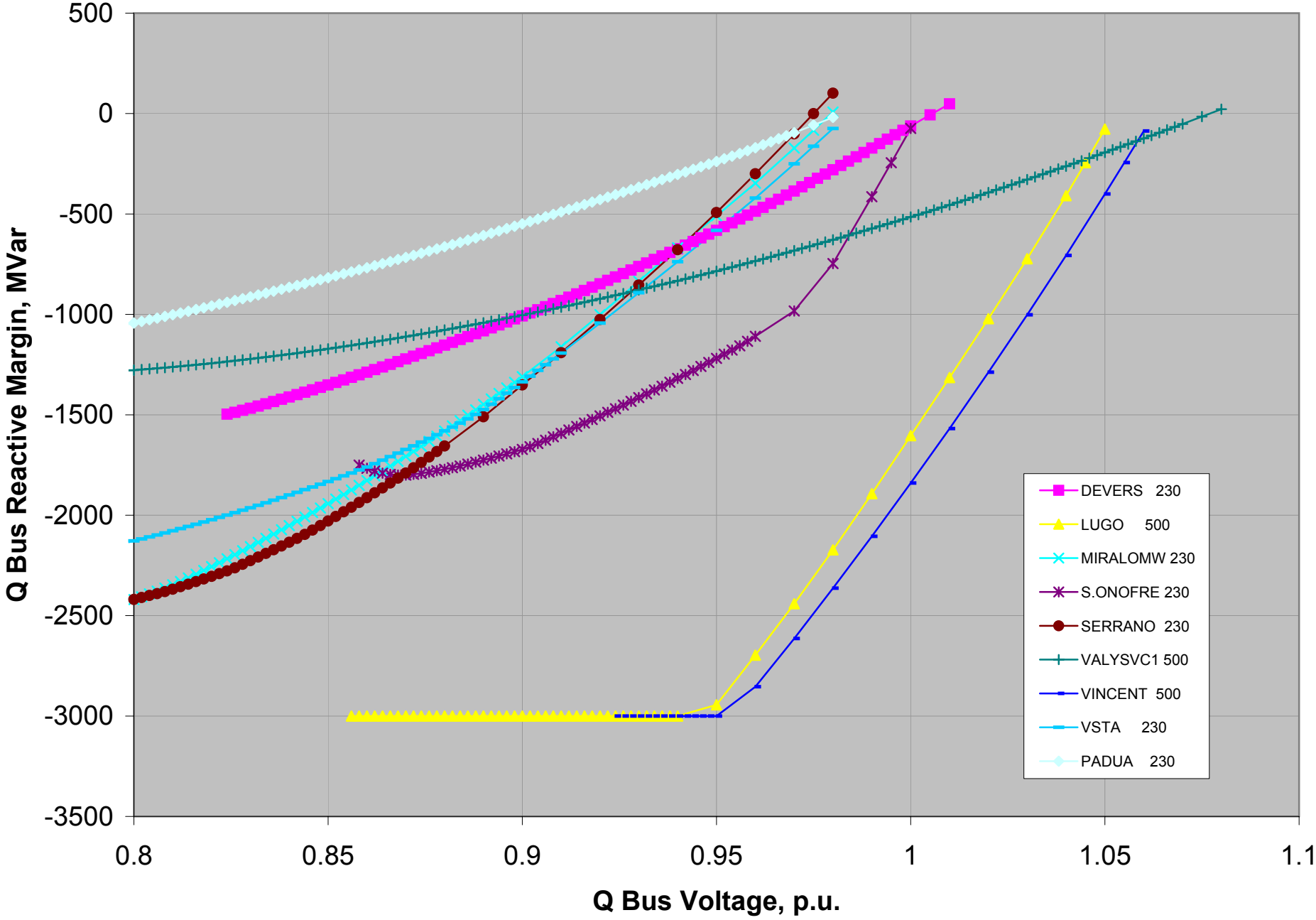
hs_alt2d1: IV - New San Filipe - CentralX 500, Outage: Devers - Valley SC 500kV
Source file = hs_alt2d1_s1_v2_deva.nose Chart 3 - CFE & IID



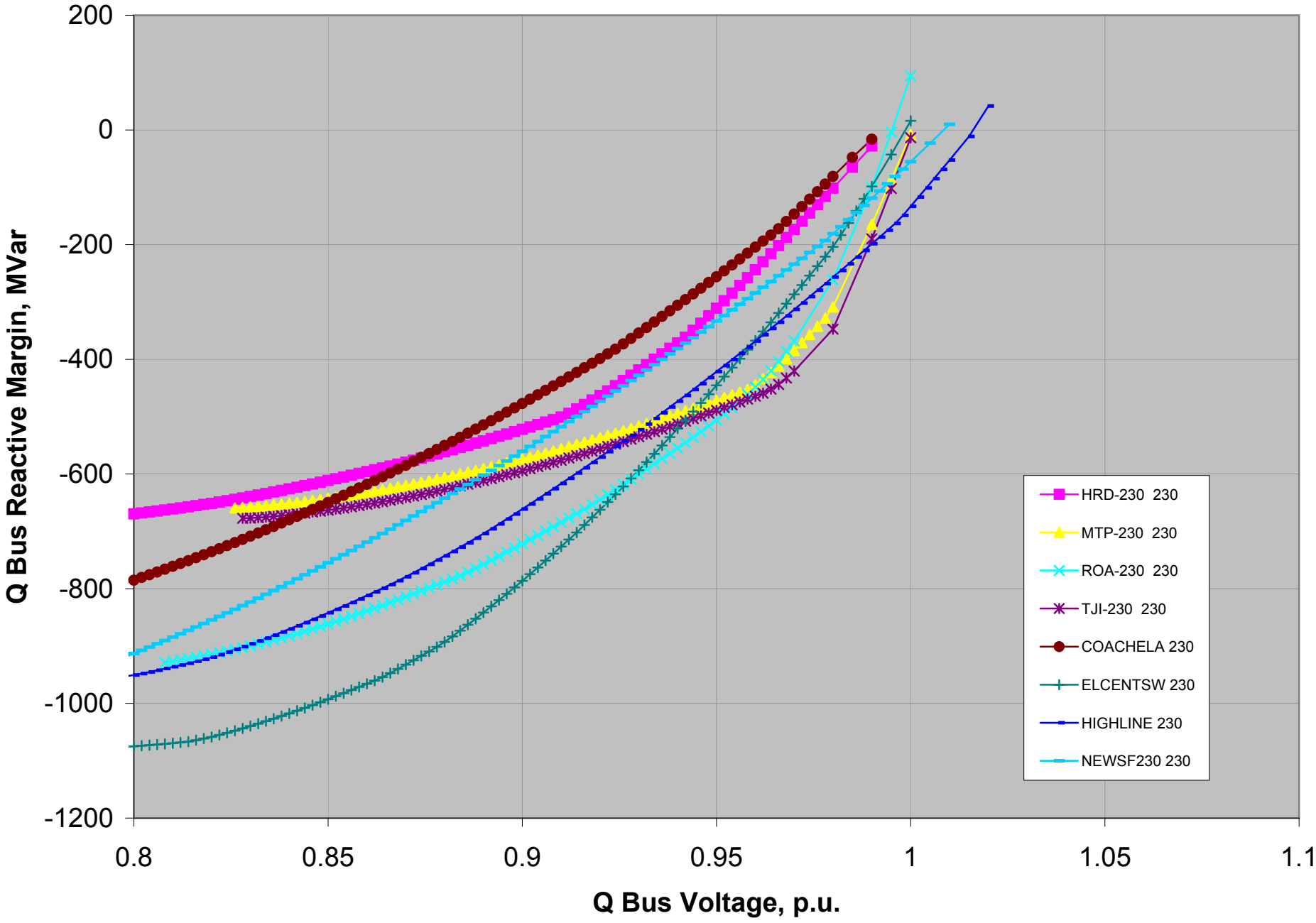
hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = hs_alt3bd1_s1_v2_deva.nose Chart 1 - SDG&E



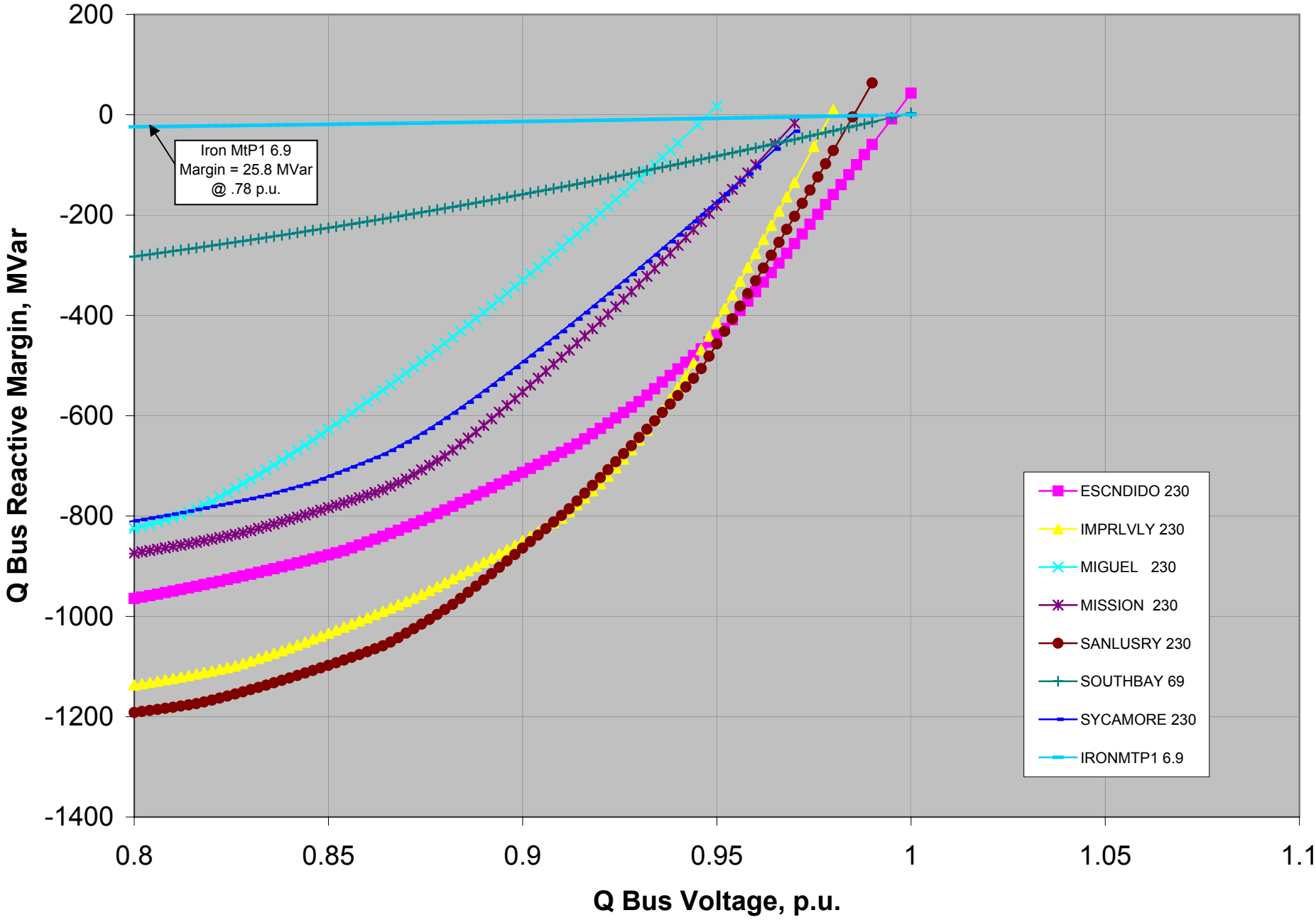
hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = hs_alt3bd1_s1_v2_deva.nose Chart 2 - SCE



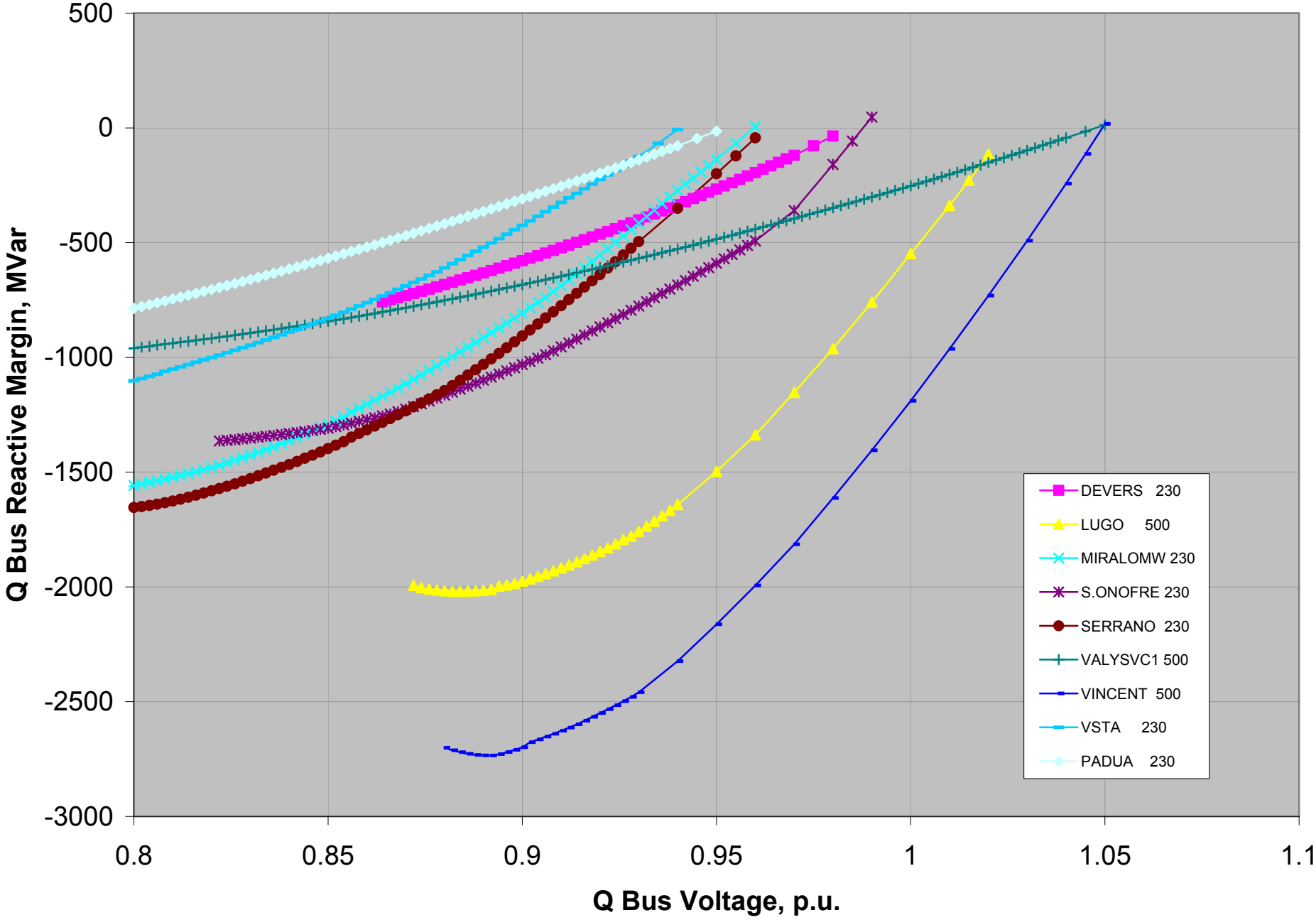
hs_alt3bd1: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = hs_alt3bd1_s1_v2_deva.nose Chart 3 - CFE & IID



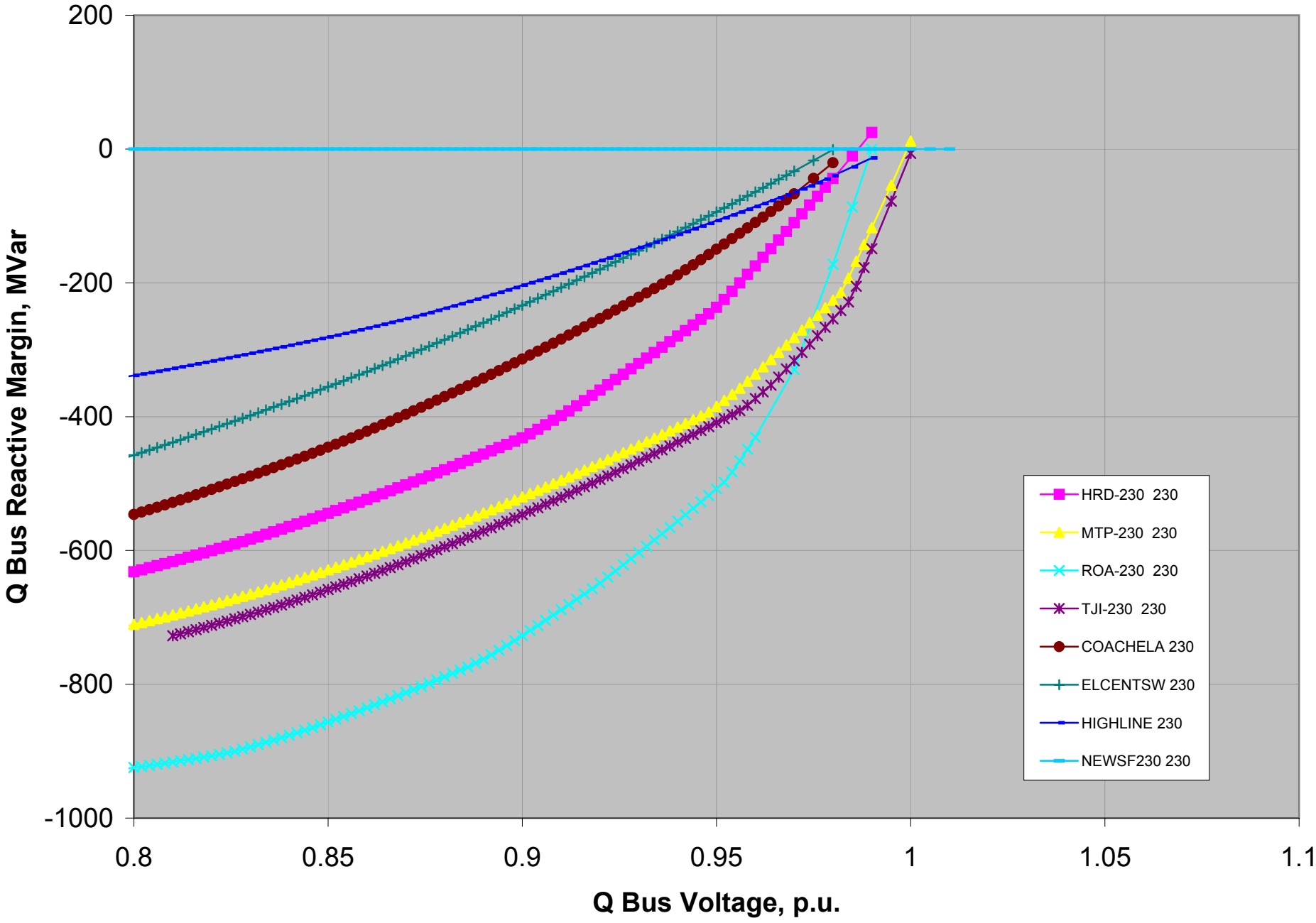
la_rev5: LA Benchmark Case - No New Facilities, Outage: Devers - Valley SC 500kV,
Source File = la_rev5_v2_deva.nose Chart 1 - SDG&E



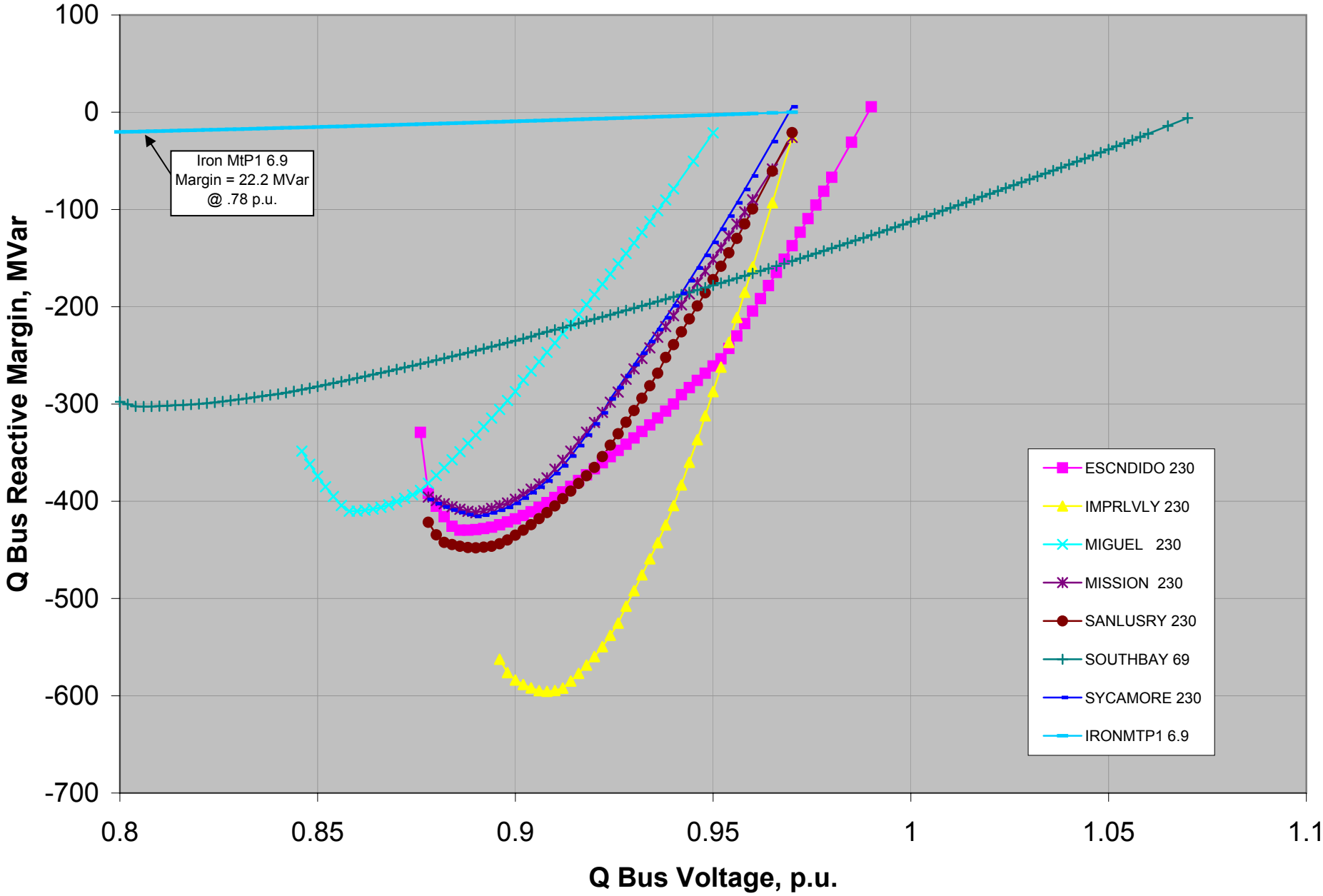
la_rev5: LA Benchmark Case - No New Facilities, Outage: Devers - Valley SC 500kV,
Source File = la_rev5_v2_deva.nose Chart 2 - SCE



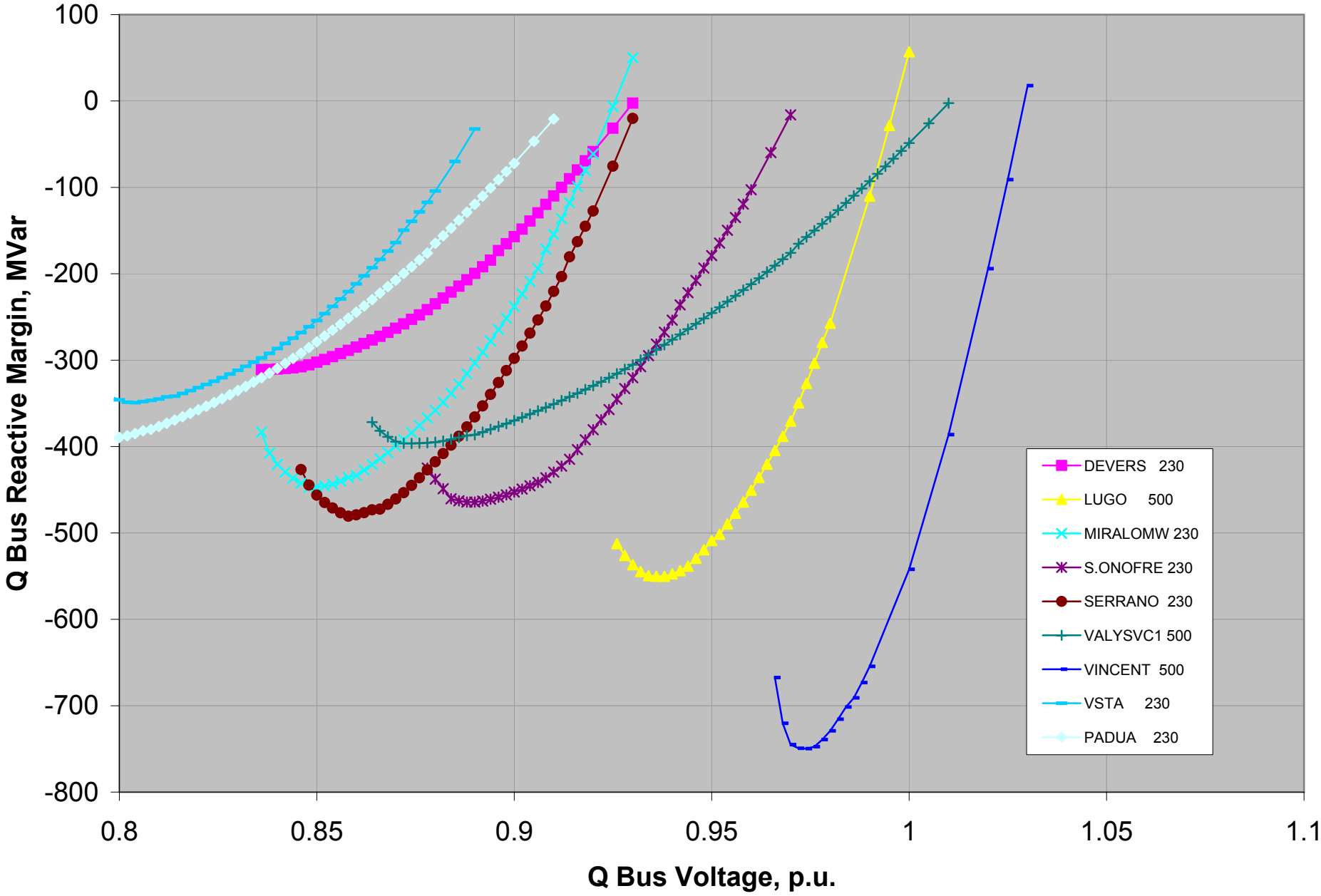
la_rev5: LA Benchmark Case - No New Facilities, Outage: Devers - Valley SC 500kV,
Source File = la_rev5_v2_deva.nose Chart 3 - CFE & IID



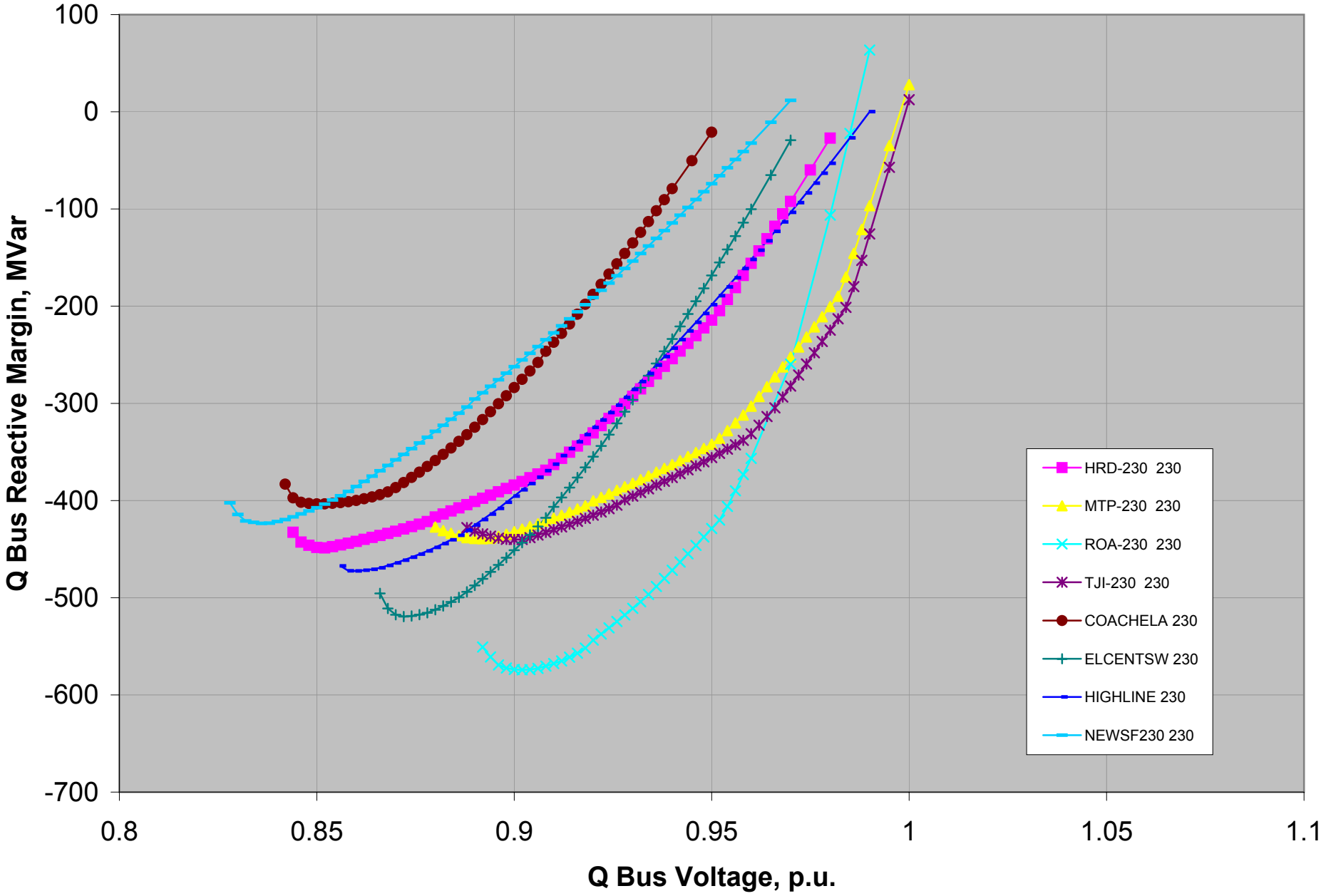
**la_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,**
**Outage: Devers - Valley SC 500kV,**
**Source File = la_alt2ad3_s1_v2_deva_caps.nose Chart 1 - SDG&E**



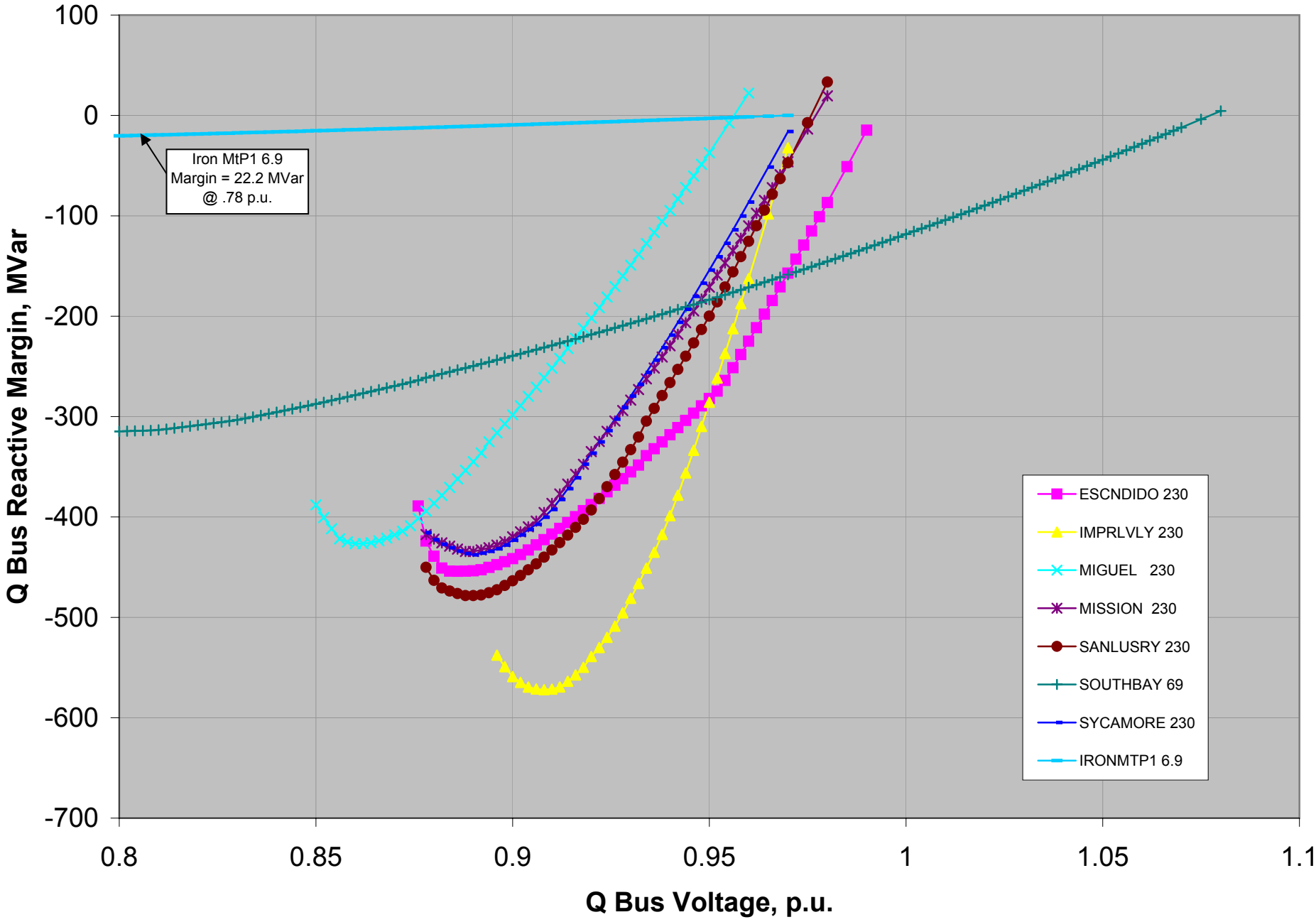
**la_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,**
**Outage: Devers - Valley SC 500kV,**
**Source File = la_alt2ad3_s1_v2_deva_caps.nose Chart 2 - SCE**

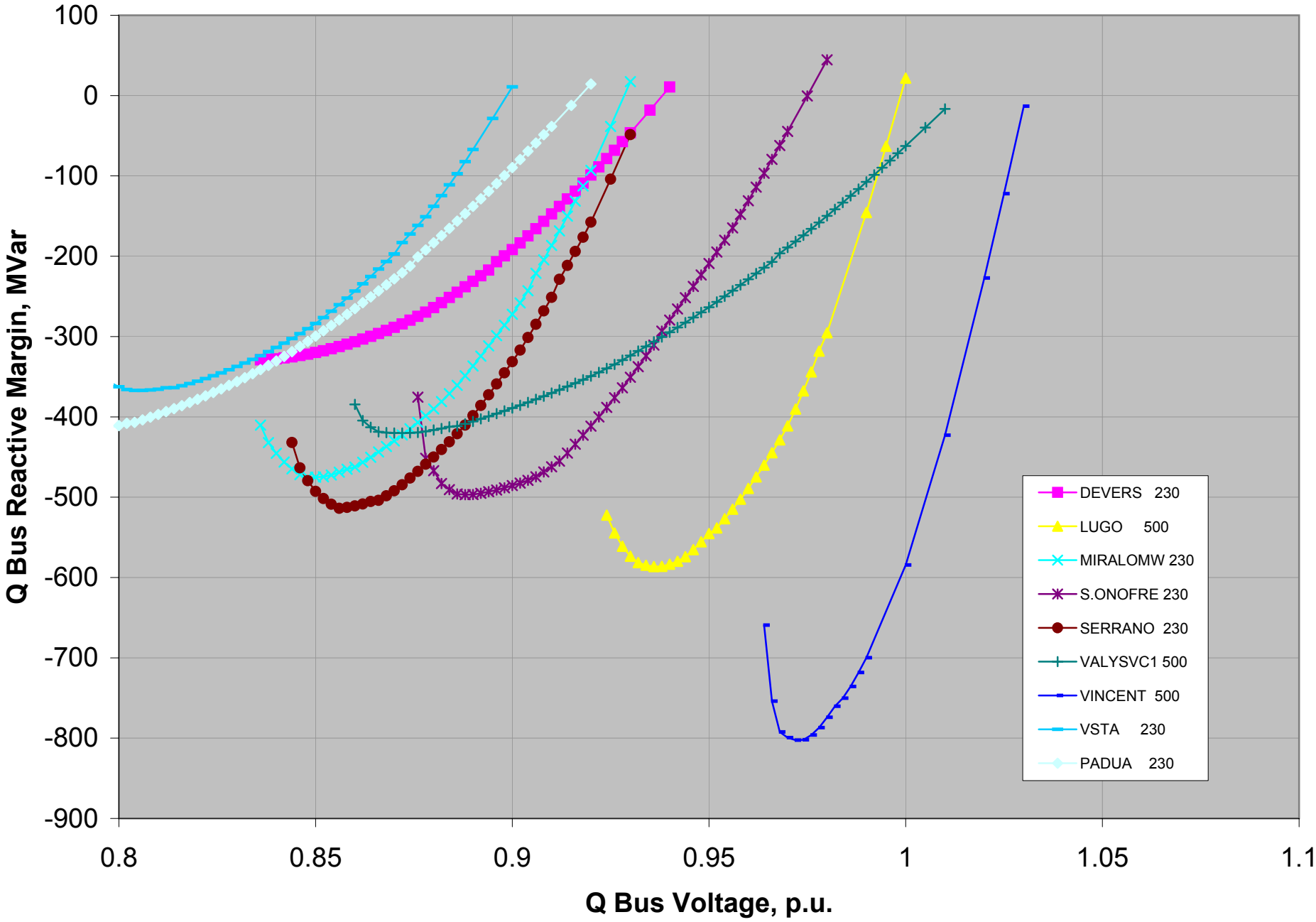


**Ia_alt2ad3: IV - New San Filipe - CentralX 500 & IH 500/230 To Coachella,**
**Outage: Devers - Valley SC 500kV,**
**Source File = Ia_alt2ad3_s1_v2_deva_caps.nose Chart 3 - CFE & IID**

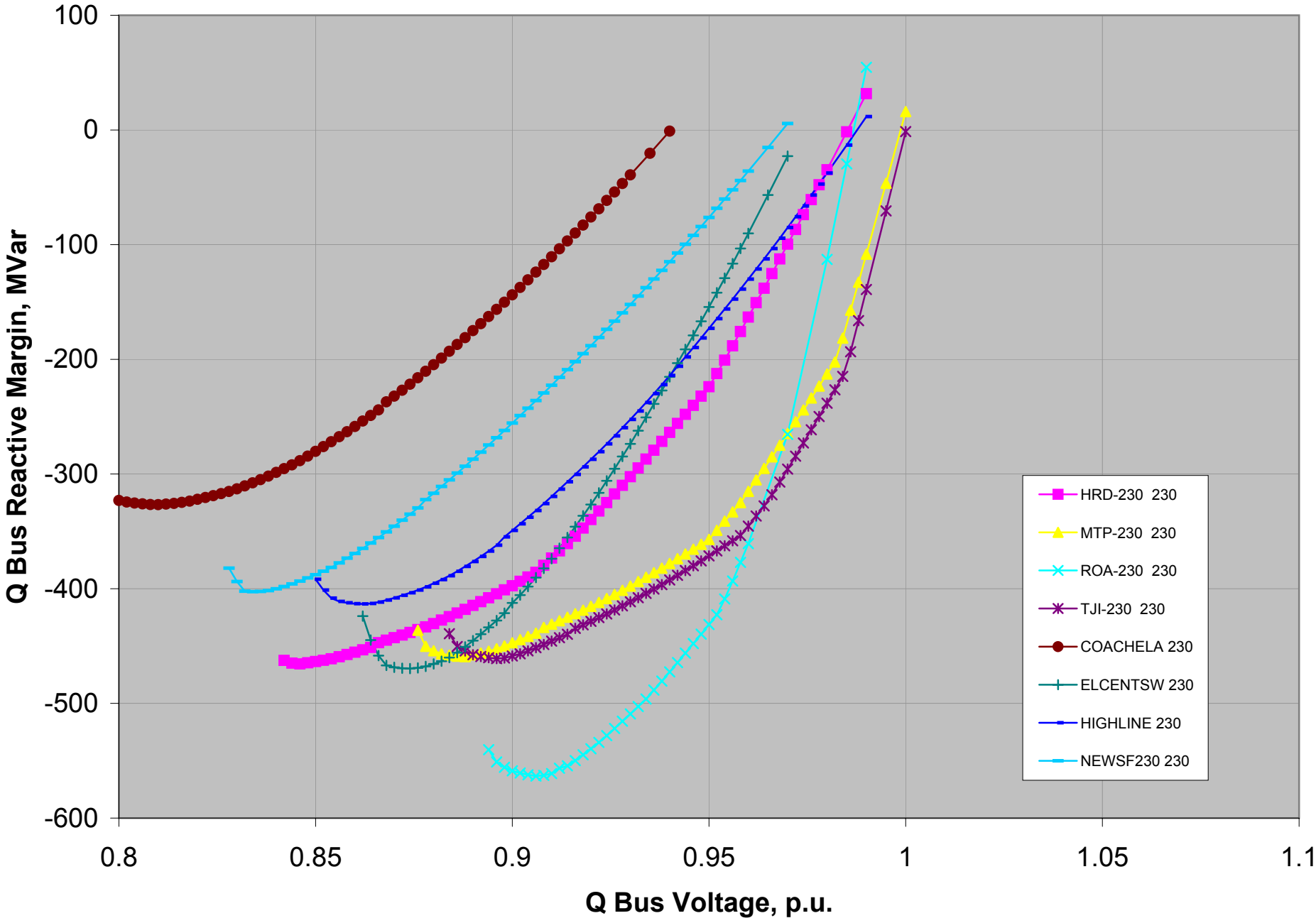


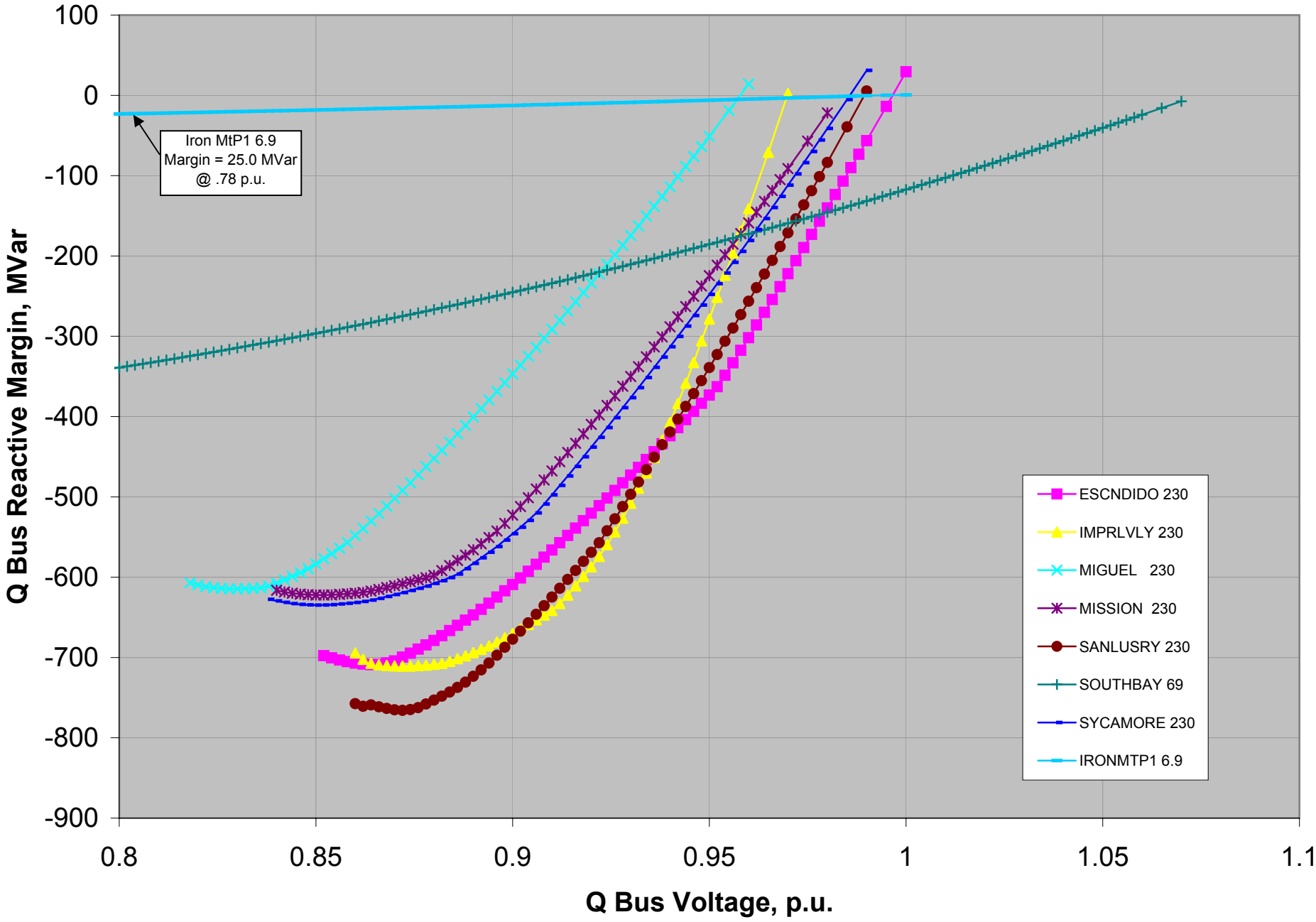
la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt2d3_s1_v2_deva_caps2.nose Chart 1 - SDG&E

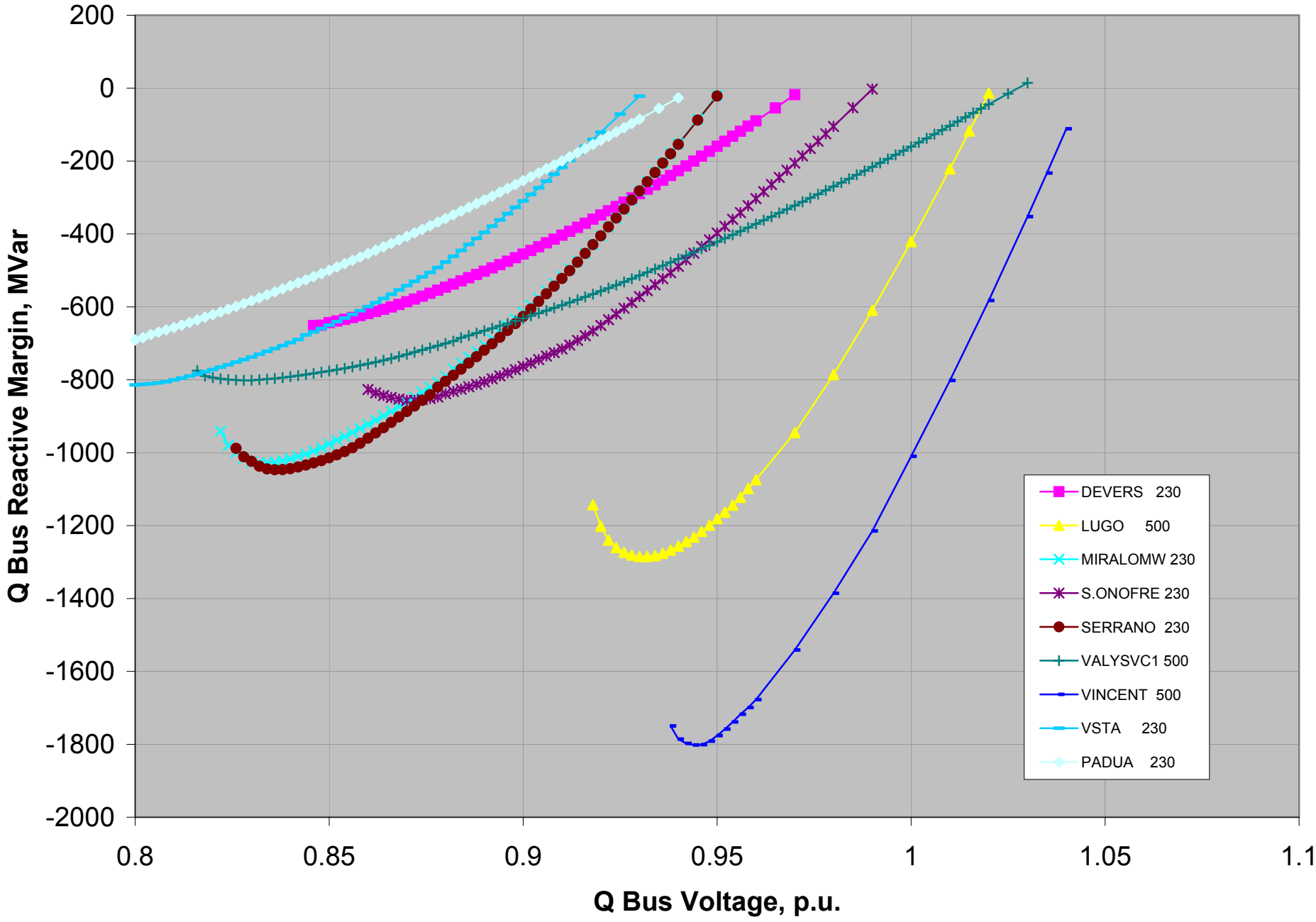



la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt2d3_s1_v2_deva_caps2.nose Chart 2 - SCE
Q Bus Reactive Margin, MVar
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
0.8
0.85
0.9
0.95
1
1.05
1.1
Q Bus Voltage, p.u.
DEVERS 230
LUGO 500
MIRALOMW 230
S.ONOFRE 230
SERRANO 230
VALYSVC1 500
VINCENT 500
VSTA 230
PADUA 230

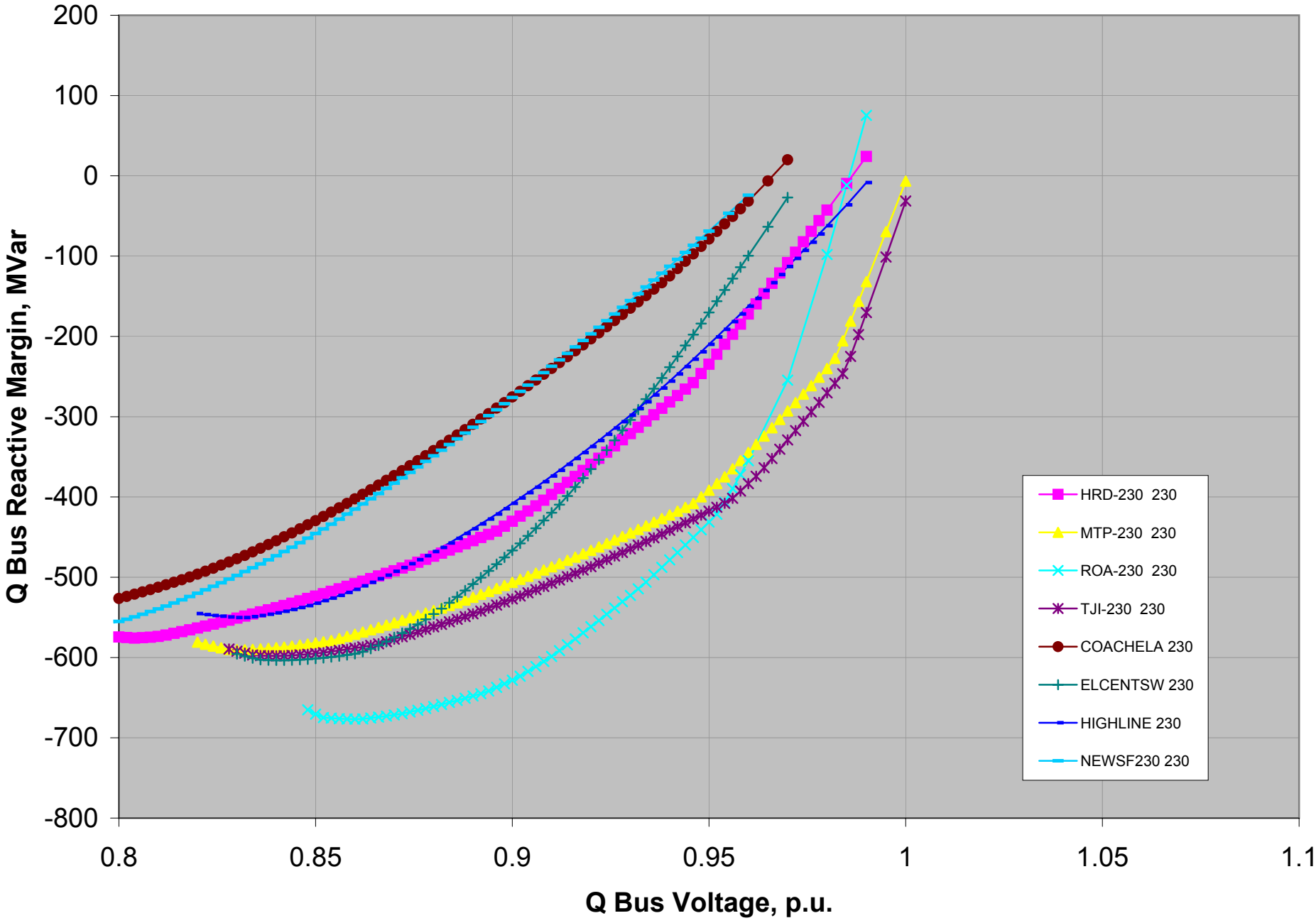
la_alt2d3 IV - New San Filipe - CentralX 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt2d3_s1_v2_deva_caps2.nose Chart 3 - CFE & IID



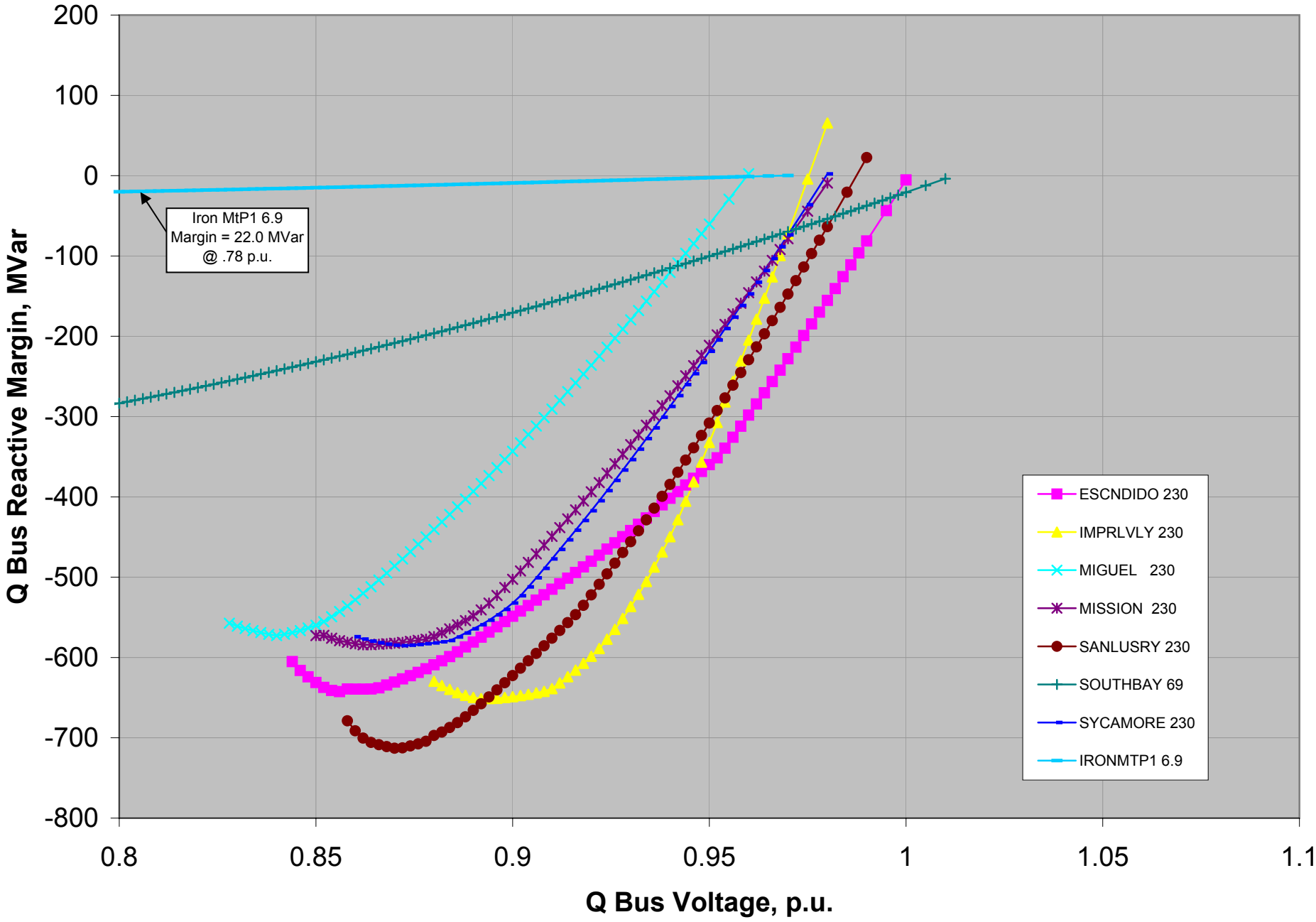

la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt3bd3_s1_v2_deva_caps.nose Chart 1 - SDG&E
Iron MtP1 6.9
Margin = 25.0 MVar
@ .78 p.u.
Q Bus Reactive Margin, MVar
Q Bus Voltage, p.u.
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
0.8
0.85
0.9
0.95
1
1.05
1.1
ESCNDIDO 230
IMPRLVLY 230
MIGUEL 230
MISSION 230
SANLUSRY 230
SOUTHBAY 69
SYCAMORE 230
IRONMTP1 6.9


la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt3bd3_s1_v2_deva_caps.nose Chart 2 - SCE
Q Bus Reactive Margin, MVar
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
0.8
0.85
0.9
0.95
1
1.05
1.1
Q Bus Voltage, p.u.
DEVERS 230
LUGO 500
MIRALOMW 230
S.ONOFRE 230
SERRANO 230
VALYSVC1 500
VINCENT 500
VSTA 230
PADUA 230

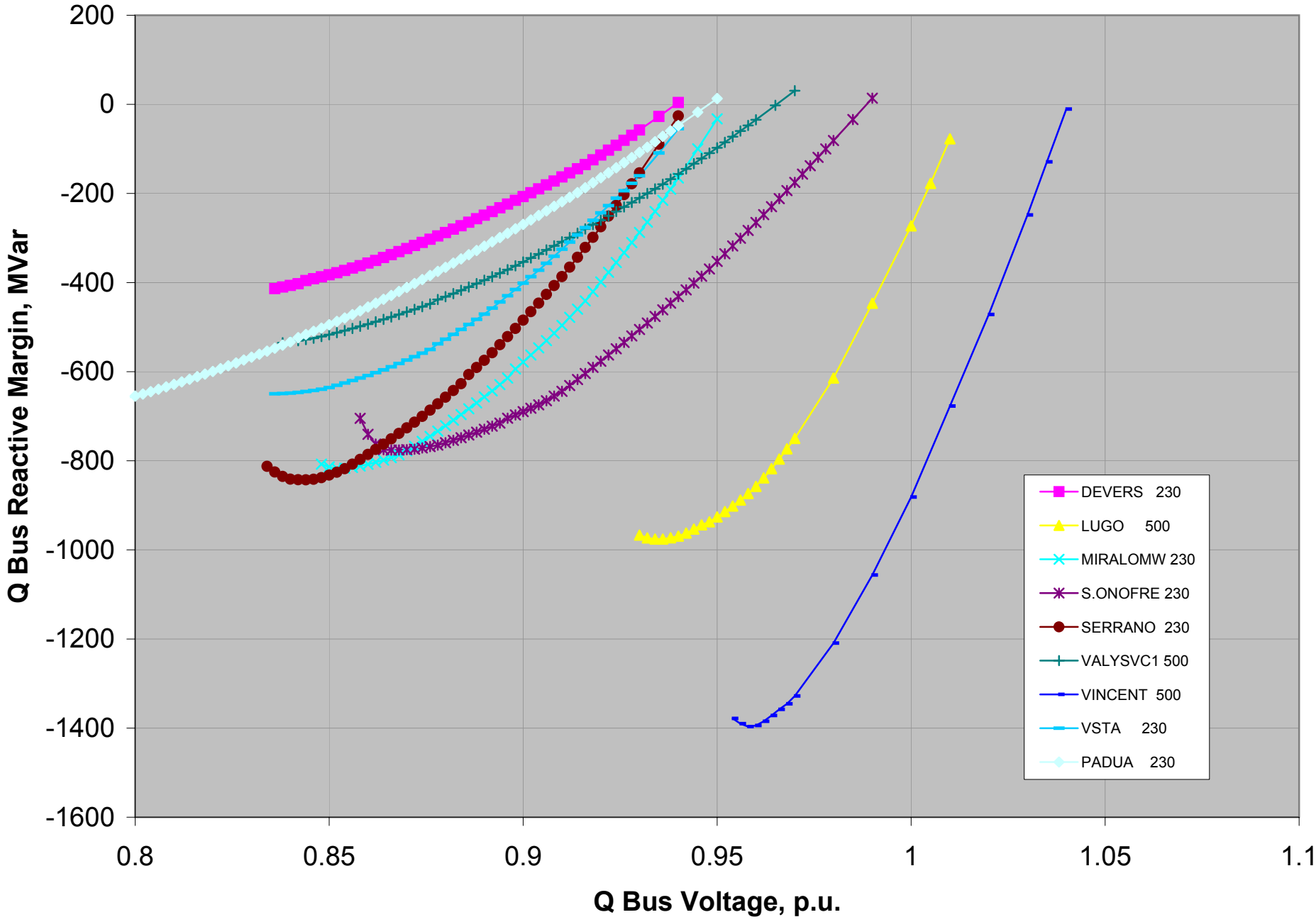
la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: Devers - Valley SC 500kV,
Source File = la_alt3bd3_s1_v2_deva_caps.nose Chart 3 - CFE & IID



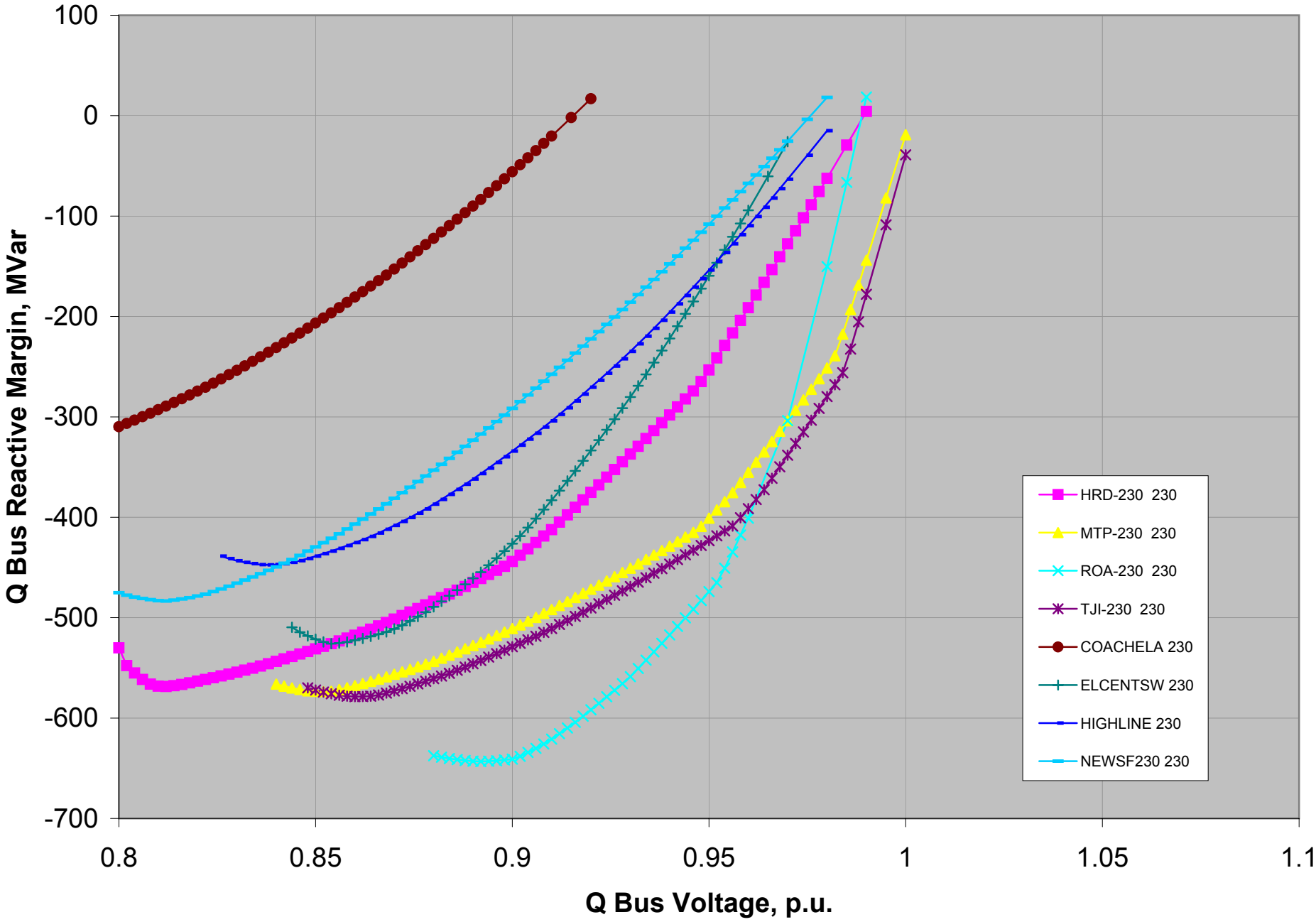
la_alt2d3 IV - New San Filipe - CentralX 500, Outage: East of Devers 500kV SLO,
Source File = la_alt2d3_s1_v2_dv_east-slo.nose Chart 1 - SDG&E



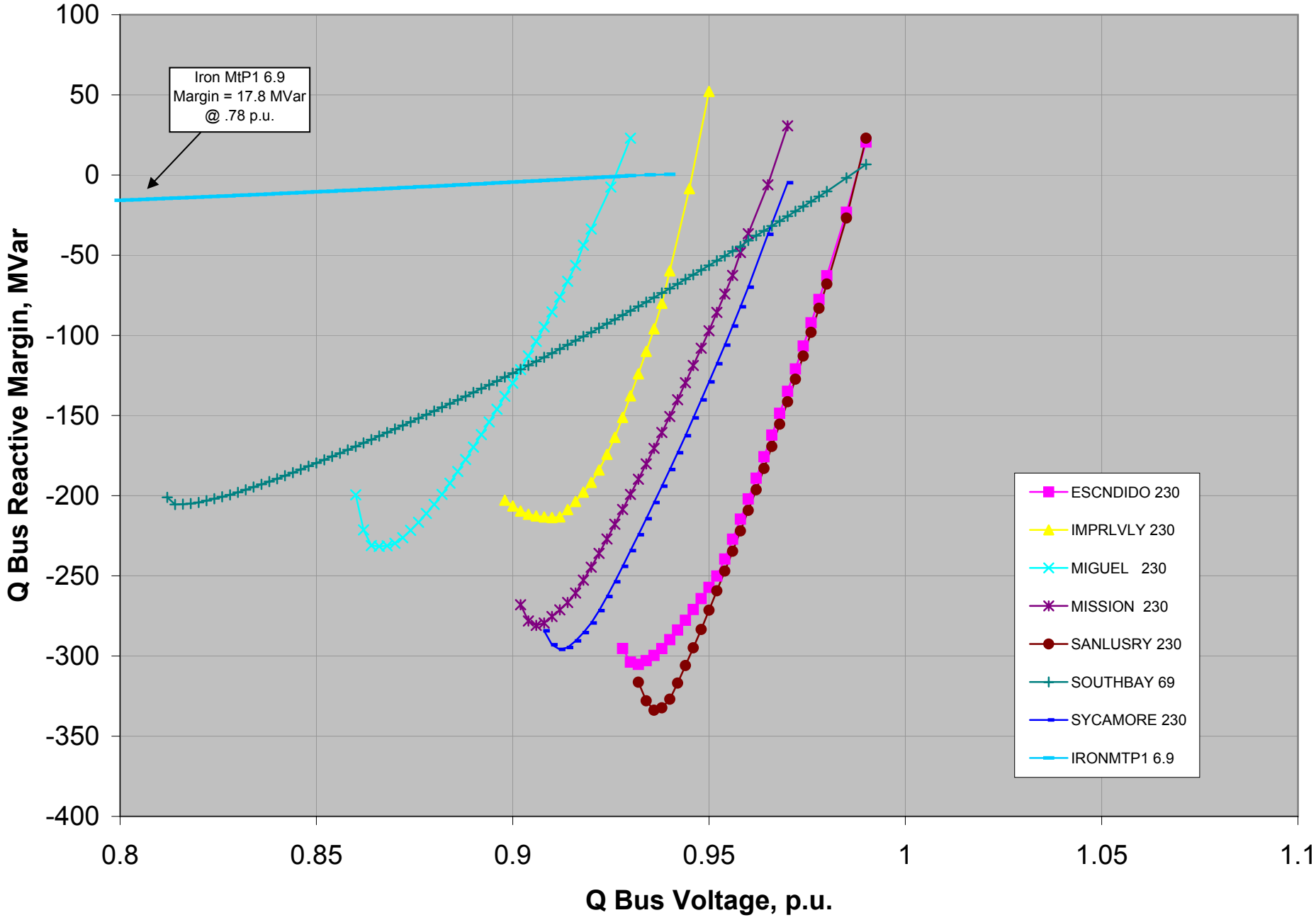
la_alt2d3 IV - New San Filipe - CentralX 500, Outage: East of Devers 500kV SLO,
Source File = la_alt2d3_s1_v2_dv_east-slo.nose Chart 2 - SCE

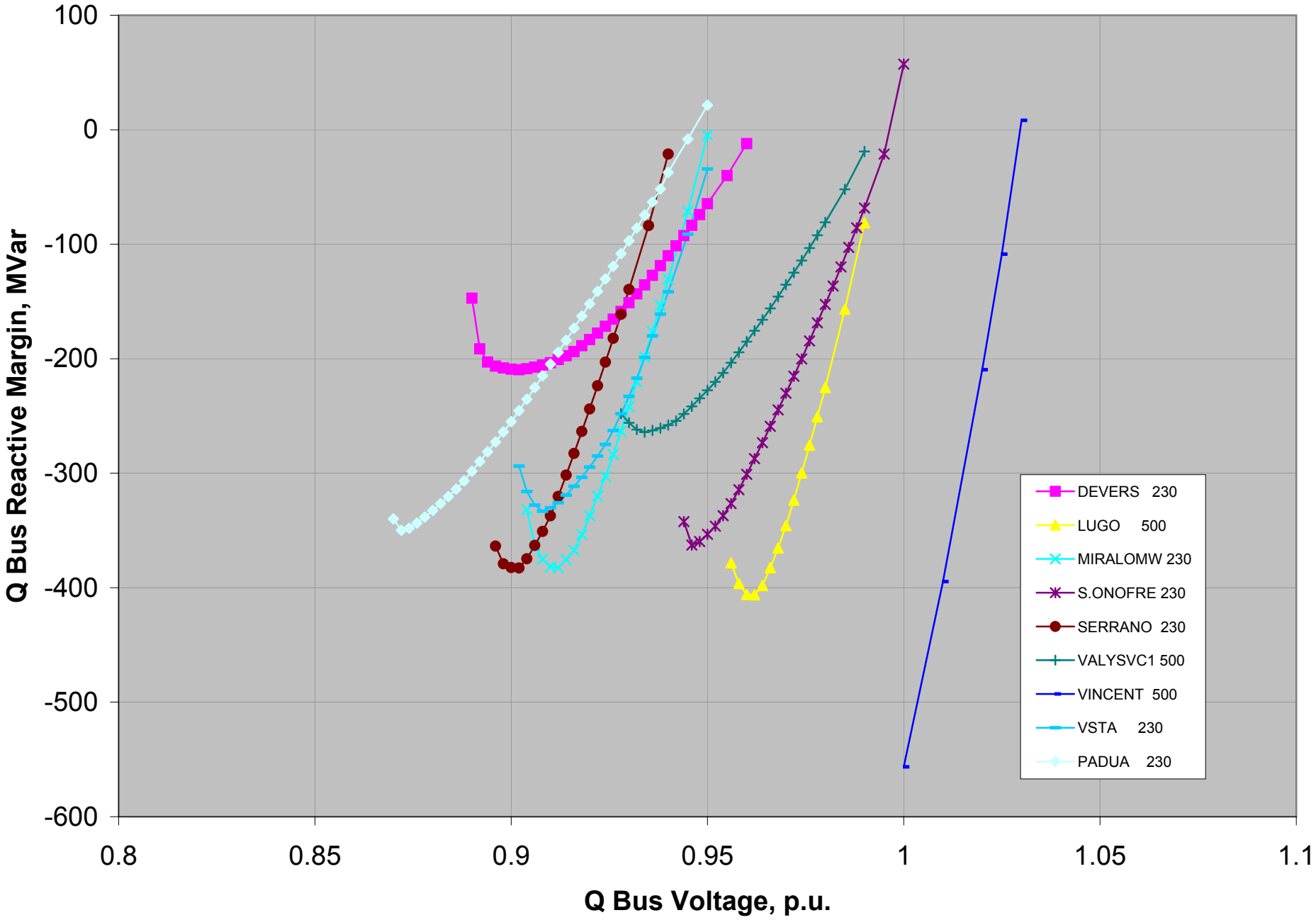


la_alt2d3 IV - New San Filipe - CentralX 500, Outage: East of Devers 500kV SLO,
Source File = la_alt2d3_s1_v2_dv_east-slo.nose Chart 3 - CFE & IID

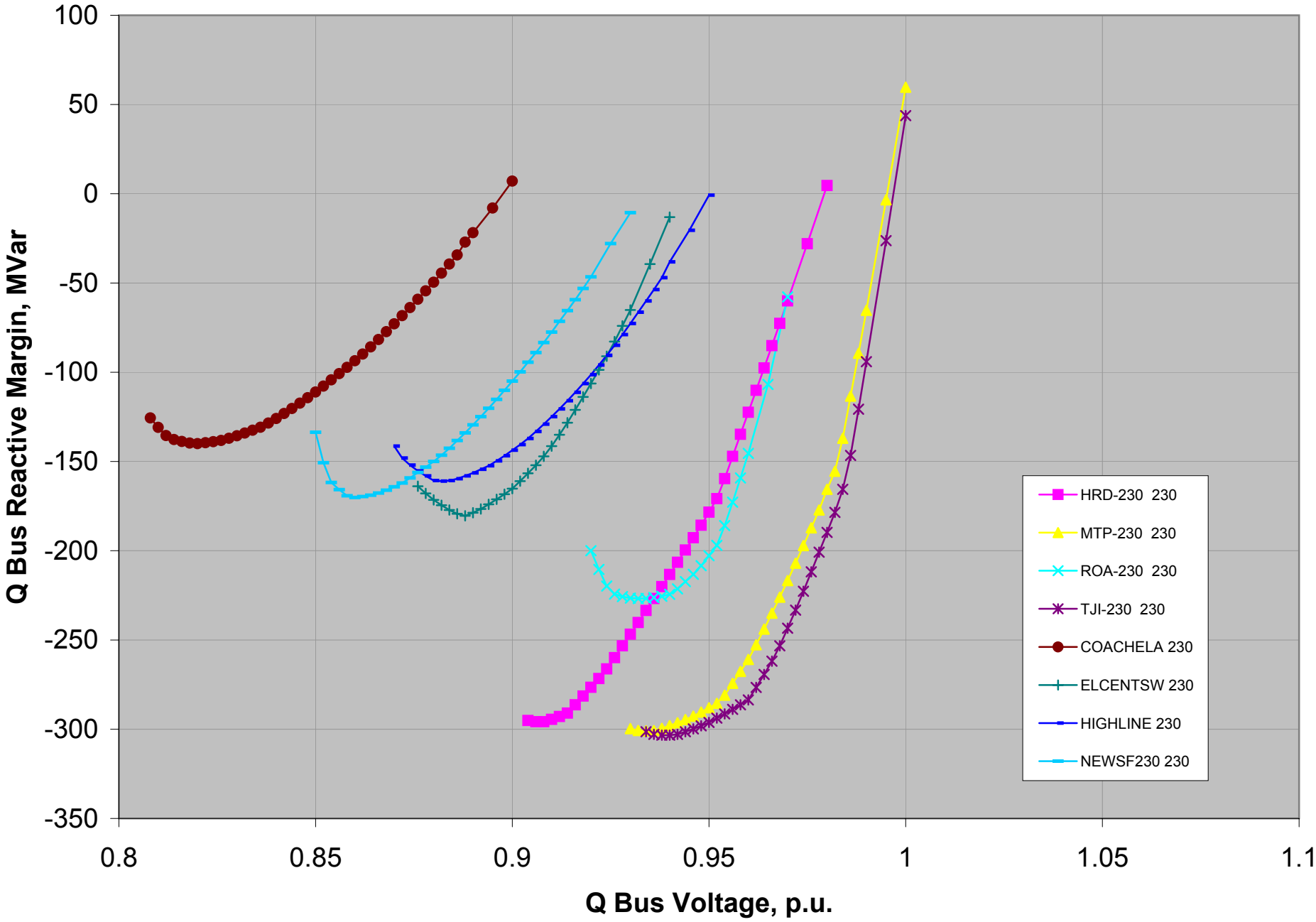


**la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: East of Devers 500kV DLO,**
**Source File = la_alt3bd3_s1_v2_dvmp12_Caps.nose Chart 1 - SDG&E**




la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: East of Devers 500kV DLO,
Source File = la_alt3bd3_s1_v2_dvmp12_Caps.nose Chart 2 - SCE
Q Bus Reactive Margin, MVar
100
0
-100
-200
-300
-400
-500
-600
0.8
0.85
0.9
0.95
1
1.05
1.1
Q Bus Voltage, p.u.
DEVERS 230
LUGO 500
MIRALOMW 230
S.ONOFRE 230
SERRANO 230
VALYSVC1 500
VINCENT 500
VSTA 230
PADUA 230

la_alt3bd3: IV - New San Filipe - North SD - SerVal 500, Outage: East of Devers 500kV DLO,
Source File = la_alt3bd3_s1_v2_dvmp12_Caps.nose Chart 3 - CFE & IID



# Imperial Valley Study Group

## Appendix D.1.3

Tables

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| **SINGLE CONTINGENCIES:** | | | | | | | | | | | | | | | | | |
| NSF_West | San Filipe - Cental X 500kV | HRD-230 230 | 100 | | | 595 | - - - | 567 | - - - | | | 516 | - - - | 493 | - - - | 603 | - - - |
| | | MTP-230 230 | 100 | | | 587 | - - - | 553 | - - - | | | 528 | - - - | 506 | - - - | 640 | - - - |
| | - or - | ROA-230 230 | 100 | | | 741 | - - - | 706 | - - - | | | 711 | - - - | 647 | - - - | 776 | - - - |
| | | TJI-230 230 | 100 | | | 602 | - - - | 562 | - - - | | | 535 | - - - | 513 | - - - | 657 | - - - |
| | San Filipe - North SD 500kV | COACHELA 230 | 100 | | | 724 | - - - | 679 | - - - | | | 776 | - - - | 506 | - - - | 551 | - - - |
| | | ELCENTSW 230 | 100 | | | 813 | - - - | 787 | - - - | | | 731 | - - - | 608 | - - - | 708 | - - - |
| | | HIGHLINE 230 | 100 | | | 755 | - - - | 728 | - - - | | | 686 | - - - | 553 | - - - | 630 | - - - |
| | | NEWSF230 230 | 100 | | | 713 | - - - | 689 | - - - | | | 672 | - - - | 570 | - - - | 661 | - - - |
| | | ESCNDIDO 230 | 150 | | | 1080 | - - - | 1093 | - - - | | | 651 | - - - | 628 | - - - | 889 | - - - |
| | | IMPRLVLY 230 | 150 | | | 886 | - - - | 842 | - - - | | | 801 | - - - | 700 | - - - | 836 | - - - |
| | | MIGUEL 230 | 150 | | | 747 | - - - | 667 | - - - | | | 564 | - - - | 531 | - - - | 711 | - - - |
| | | MISSION 230 | 150 | | | 814 | - - - | 701 | - - - | | | 576 | - - - | 549 | - - - | 731 | - - - |
| | | SANLUSRY 230 | 150 | | | 1326 | - - - | 1241 | - - - | | | 750 | - - - | 724 | - - - | 967 | - - - |
| | | SOUTHBAY 69 | 150 | | | 307 | - - - | 245 | 163% | | | 276 | 184% | 273 | 182% | 304 | - - - |
| | | SYCAMORE 230 | 150 | | | 834 | - - - | 720 | - - - | | | 579 | - - - | 552 | - - - | 751 | - - - |
| | | DEVERS 230 | 300 | | | 1490 | - - - | 1566 | - - - | | | 744 | - - - | 721 | - - - | 801 | - - - |
| | | LUGO 500 | 300 | | | 3000 | - - - | 3000 | - - - | | | 1686 | - - - | 1675 | - - - | 1958 | - - - |
| | | MIRALOMW 230 | 300 | | | 2389 | - - - | 2473 | - - - | | | 1237 | - - - | 1252 | - - - | 1450 | - - - |
| | | S.ONOFRE 230 | 300 | | | 1713 | - - - | 1650 | - - - | | | 880 | - - - | 852 | - - - | 1118 | - - - |
| | | SERRANO 230 | 300 | | | 2434 | - - - | 2482 | - - - | | | 1247 | - - - | 1238 | - - - | 1455 | - - - |
| | | VALYSVC1 500 | 300 | | | 1755 | - - - | 1959 | - - - | | | 877 | - - - | 875 | - - - | 1058 | - - - |
| | | VINCENT 500 | 300 | | | 3000 | - - - | 3000 | - - - | | | 2228 | - - - | 2221 | - - - | 2628 | - - - |
| | | VSTA 230 | 300 | | | 2162 | - - - | 2219 | - - - | | | 1038 | - - - | 1018 | - - - | 1198 | - - - |
| | | PADUA 230 | 300 | | | 1111 | - - - | 1123 | - - - | | | 853 | - - - | 851 | - - - | 919 | - - - |
| | | IRONMTP1 6.9 | | | | 26 | | 25 | | | | 25 | | 25 | | 25 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| basf | Banister - San Filipe 230 | HRD-230 230 | 100 | | | 731 | - - - | 684 | - - - | | | 661 | - - - | 610 | - - - | 633 | - - - |
| | | MTP-230 230 | 100 | | | 733 | - - - | 672 | - - - | | | 697 | - - - | 642 | - - - | 663 | - - - |
| | | ROA-230 230 | 100 | | | 833 | - - - | 861 | - - - | | | 797 | - - - | 635 | - - - | 711 | - - - |
| | | TJI-230 230 | 100 | | | 756 | - - - | 690 | - - - | | | 708 | - - - | 654 | - - - | 678 | - - - |
| | | COACHELA 230 | 100 | | | 627 | - - - | 607 | - - - | | | 710 | - - - | 345 | - - - | 432 | - - - |
| | | ELCENTSW 230 | 100 | | | 758 | - - - | 777 | - - - | | | 663 | - - - | 445 | - - - | 515 | - - - |
| | | HIGHLINE 230 | 100 | | | 670 | - - - | 674 | - - - | | | 570 | - - - | 365 | - - - | 425 | - - - |
| | | NEWSF230 230 | 100 | | | 701 | - - - | 853 | - - - | | | 657 | - - - | 628 | - - - | 740 | - - - |
| | | ESCNDIDO 230 | 150 | | | 1377 | - - - | 1279 | - - - | | | 874 | - - - | 805 | - - - | 907 | - - - |
| | | IMPRLVLY 230 | 150 | | | 965 | - - - | 1035 | - - - | | | 853 | - - - | 631 | - - - | 730 | - - - |
| | | MIGUEL 230 | 150 | | | 1007 | - - - | 914 | - - - | | | 783 | - - - | 695 | - - - | 765 | - - - |
| | | MISSION 230 | 150 | | | 1114 | - - - | 912 | - - - | | | 801 | - - - | 723 | - - - | 773 | - - - |
| | | SANLUSRY 230 | 150 | | | 1710 | - - - | 1468 | - - - | | | 1013 | - - - | 928 | - - - | 1002 | - - - |
| | | SOUTHBAY 69 | 150 | | | 358 | - - - | 298 | 198% | | | 301 | - - - | 296 | 197% | 291 | 194% |
| | | SYCAMORE 230 | 150 | | | 1166 | - - - | 918 | - - - | | | 815 | - - - | 731 | - - - | 790 | - - - |
| | | DEVERS 230 | 300 | | | 1522 | - - - | 1520 | - - - | | | 789 | - - - | 691 | - - - | 875 | - - - |
| | | LUGO 500 | 300 | | | 3000 | - - - | 3000 | - - - | | | 1966 | - - - | 1811 | - - - | 2248 | - - - |
| | | MIRALOMW 230 | 300 | | | 2479 | - - - | 2589 | - - - | | | 1455 | - - - | 1362 | - - - | 1605 | - - - |
| | | S.ONOFRE 230 | 300 | | | 2104 | - - - | 1915 | - - - | | | 1160 | - - - | 1071 | - - - | 1168 | - - - |
| | | SERRANO 230 | 300 | | | 2528 | - - - | 2619 | - - - | | | 1441 | - - - | 1378 | - - - | 1600 | - - - |
| | | VALYSVC1 500 | 300 | | | 1795 | - - - | 2050 | - - - | | | 975 | - - - | 910 | - - - | 1165 | - - - |
| | | VINCENT 500 | 300 | | | 3000 | - - - | 3000 | - - - | | | 2553 | - - - | 2426 | - - - | 2945 | - - - |
| | | VSTA 230 | 300 | | | 2207 | - - - | 2267 | - - - | | | 1169 | - - - | 1048 | - - - | 1311 | - - - |
| | | PADUA 230 | 300 | | | 1132 | - - - | 1146 | - - - | | | 903 | - - - | 890 | - - - | 980 | - - - |
| | | IRONMTP1 6.9 | | | | 26 | | 26 | | | | 25 | | 24 | | 25 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| | | | | | | | | | | | | See Note 2 | | See Note 7 | | See Note 2 | |
| deva | Devers - ValleySC 500kV | HRD-230 230 | 100 | 842 | - - - | 715 | - - - | 680 | - - - | 660 | - - - | 449 | - - - | 466 | - - - | 576 | - - - |
| | | MTP-230 230 | 100 | 849 | - - - | 707 | - - - | 659 | - - - | 718 | - - - | 439 | - - - | 459 | - - - | 590 | - - - |
| | | ROA-230 230 | 100 | 952 | - - - | 889 | - - - | 929 | - - - | 929 | - - - | 574 | - - - | 563 | - - - | 677 | - - - |
| Cases | | TJI-230 230 | 100 | 873 | - - - | 730 | - - - | 677 | - - - | 728 | - - - | 440 | - - - | 461 | - - - | 598 | - - - |
| la_alt2ad3, | | COACHELA 230 | 100 | 678 | - - - | 796 | - - - | 829 | - - - | 580 | - - - | 404 | - - - | 327 | - - - | 544 | - - - |
| & la_alt3bd3 | | ELCENTSW 230 | 100 | 579 | - - - | 973 | - - - | 1078 | - - - | 494 | - - - | 519 | - - - | 470 | - - - | 604 | - - - |
| deva_caps | | HIGHLINE 230 | 100 | 448 | - - - | 889 | - - - | 953 | - - - | 358 | - - - | 472 | - - - | 413 | - - - | 550 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 832 | - - - | 965 | - - - | NA | NA | 424 | - - - | 403 | - - - | 565 | - - - |
| Case | | ESCNDIDO 230 | 150 | 1257 | - - - | 1305 | - - - | 1212 | - - - | 987 | - - - | 430 | - - - | 454 | - - - | 709 | - - - |
| la_alt2d3, | | IMPRLVLY 230 | 150 | 1317 | - - - | 1097 | - - - | 1224 | - - - | 1159 | - - - | 596 | - - - | 572 | - - - | 711 | - - - |
| deva_caps2 | | MIGUEL 230 | 150 | 1132 | - - - | 965 | - - - | 874 | - - - | 860 | - - - | 410 | - - - | 427 | - - - | 615 | - - - |
| | | MISSION 230 | 150 | 1141 | - - - | 1049 | - - - | 871 | - - - | 892 | - - - | 412 | - - - | 434 | - - - | 622 | - - - |
| | | SANLUSRY 230 | 150 | 1613 | - - - | 1619 | - - - | 1389 | - - - | 1198 | - - - | 448 | - - - | 478 | - - - | 766 | - - - |
| | | SOUTHBAY 69 | 150 | 330 | - - - | 343 | - - - | 287 | 192% | 303 | - - - | 303 | - - - | 315 | - - - | 354 | - - - |
| | | SYCAMORE 230 | 150 | 1113 | - - - | 1095 | - - - | 879 | - - - | 833 | - - - | 416 | - - - | 438 | - - - | 635 | - - - |
| | | DEVERS 230 | 300 | 1453 | - - - | 1370 | - - - | 1497 | - - - | 758 | - - - | 311 | 104% | 329 | 110% | 651 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2019 | - - - | 550 | 183% | 587 | 196% | 1285 | - - - |
| | | MIRALOMW 230 | 300 | 2464 | - - - | 2322 | - - - | 2448 | - - - | 1573 | - - - | 447 | 149% | 475 | 158% | 1028 | - - - |
| | | S.ONOFRE 230 | 300 | 2012 | - - - | 2004 | - - - | 1800 | - - - | 1364 | - - - | 464 | 155% | 497 | 166% | 857 | - - - |
| | | SERRANO 230 | 300 | 2437 | - - - | 2310 | - - - | 2429 | - - - | 1655 | - - - | 481 | 160% | 514 | 171% | 1047 | - - - |
| | | VALYSVC1 500 | 300 | 1156 | - - - | 1018 | - - - | 1300 | - - - | 991 | - - - | 396 | 132% | 420 | 140% | 802 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2734 | - - - | 750 | - - - | 803 | - - - | 1802 | - - - |
| | | VSTA 230 | 300 | 2268 | - - - | 2129 | - - - | 2219 | - - - | 1180 | - - - | 349 | 116% | 367 | 122% | 816 | - - - |
| | | PADUA 230 | 300 | 1129 | - - - | 1098 | - - - | 1121 | - - - | 859 | - - - | 394 | 131% | 416 | 139% | 747 | - - - |
| | | IRONMTP1 6.9 | | 25 | | 26 | | 26 | | 26 | | 22 | | 22 | | 25 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| seva | Serrano - ValleySC 500 | HRD-230 230 | 100 | 865 | - - - | 762 | - - - | 715 | - - - | 730 | - - - | 627 | - - - | 614 | - - - | 680 | - - - |
| | | MTP-230 230 | 100 | 871 | - - - | 754 | - - - | 694 | - - - | 780 | - - - | 646 | - - - | 628 | - - - | 718 | - - - |
| | | ROA-230 230 | 100 | 984 | - - - | 953 | - - - | 990 | - - - | 1069 | - - - | 854 | - - - | 795 | - - - | 949 | - - - |
| | - or - | TJI-230 230 | 100 | 898 | - - - | 776 | - - - | 710 | - - - | 809 | - - - | 654 | - - - | 638 | - - - | 726 | - - - |
| | | COACHELA 230 | 100 | 691 | - - - | 798 | - - - | 816 | - - - | 748 | - - - | 890 | - - - | 588 | - - - | 734 | - - - |
| | SerVal - ValleySC 500 | ELCENTSW 230 | 100 | 583 | - - - | 1043 | - - - | 1144 | - - - | 519 | - - - | 858 | - - - | 735 | - - - | 895 | - - - |
| | | HIGHLINE 230 | 100 | 447 | - - - | 942 | - - - | 994 | - - - | 416 | - - - | 791 | - - - | 653 | - - - | 780 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 881 | - - - | 1019 | - - - | NA | NA | 731 | - - - | 658 | - - - | 797 | - - - |
| | | ESCNDIDO 230 | 150 | 1285 | - - - | 1385 | - - - | 1272 | - - - | 1150 | - - - | 774 | - - - | 749 | - - - | 990 | - - - |
| | | IMPRLVLY 230 | 150 | 1365 | - - - | 1201 | - - - | 1334 | - - - | 1373 | - - - | 954 | - - - | 859 | - - - | 1076 | - - - |
| | | MIGUEL 230 | 150 | 1180 | - - - | 1063 | - - - | 942 | - - - | 1054 | - - - | 708 | - - - | 672 | - - - | 859 | - - - |
| | | MISSION 230 | 150 | 1184 | - - - | 1143 | - - - | 928 | - - - | 1083 | - - - | 711 | - - - | 684 | - - - | 853 | - - - |
| | | SANLUSRY 230 | 150 | 1648 | - - - | 1724 | - - - | 1461 | - - - | 1466 | - - - | 891 | - - - | 860 | - - - | 1099 | - - - |
| | | SOUTHBAY 69 | 150 | 338 | - - - | 357 | - - - | 297 | 198% | 330 | - - - | 299 | 199% | 298 | 198% | 307 | - - - |
| | | SYCAMORE 230 | 150 | 1154 | - - - | 1202 | - - - | 935 | - - - | 988 | - - - | 722 | - - - | 688 | - - - | 871 | - - - |
| | | DEVERS 230 | 300 | 1454 | - - - | 1317 | - - - | 1390 | - - - | 1244 | - - - | 782 | - - - | 768 | - - - | 996 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1811 | - - - | 1776 | - - - | 2415 | - - - |
| | | MIRALOMW 230 | 300 | 2531 | - - - | 2477 | - - - | 2611 | - - - | 2307 | - - - | 1408 | - - - | 1383 | - - - | 1757 | - - - |
| | | S.ONOFRE 230 | 300 | 2034 | - - - | 2104 | - - - | 1901 | - - - | 1660 | - - - | 1025 | - - - | 994 | - - - | 1272 | - - - |
| | | SERRANO 230 | 300 | 2418 | - - - | 2418 | - - - | 2543 | - - - | 2286 | - - - | 1404 | - - - | 1383 | - - - | 1713 | - - - |
| | | VALYSVC1 500 | 300 | 720 | - - - | 613 | - - - | 615 | - - - | 914 | - - - | 599 | 200% | 604 | - - - | 728 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2403 | - - - | 2365 | - - - | 3000 | - - - |
| | | VSTA 230 | 300 | 2342 | - - - | 2246 | - - - | 2310 | - - - | 1853 | - - - | 1127 | - - - | 1105 | - - - | 1445 | - - - |
| | | PADUA 230 | 300 | 1135 | - - - | 1123 | - - - | 1147 | - - - | 1093 | - - - | 847 | - - - | 842 | - - - | 976 | - - - |
| | | IRONMTP1 6.9 | | 25 | | 26 | | 26 | | 28 | | 26 | | 25 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| dv_east_slo | Devers - Palo Verde 500kV #1 | HRD-230 230 | 100 | 836 | - - - | 738 | - - - | 690 | - - - | 701 | - - - | 634 | - - - | 569 | - - - | 682 | - - - |
| | | MTP-230 230 | 100 | 842 | - - - | 727 | - - - | 670 | - - - | 748 | - - - | 649 | - - - | 574 | - - - | 716 | - - - |
| | | ROA-230 230 | 100 | 976 | - - - | 943 | - - - | 968 | - - - | 988 | - - - | 826 | - - - | 643 | - - - | 840 | - - - |
| | - or - | TJI-230 230 | 100 | 865 | - - - | 753 | - - - | 685 | - - - | 775 | - - - | 658 | - - - | 579 | - - - | 726 | - - - |
| | | COACHELA 230 | 100 | 667 | - - - | 697 | - - - | 729 | - - - | 654 | - - - | 735 | - - - | 319 | - - - | 529 | - - - |
| | Devers - Midpints 500kV #1 | ELCENTSW 230 | 100 | 569 | - - - | 998 | - - - | 1083 | - - - | 492 | - - - | 791 | - - - | 526 | - - - | 726 | - - - |
| | | HIGHLINE 230 | 100 | 438 | - - - | 889 | - - - | 939 | - - - | 380 | - - - | 714 | - - - | 447 | - - - | 630 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 861 | - - - | 982 | - - - | NA | NA | 696 | - - - | 484 | - - - | 689 | - - - |
| | | ESCNDIDO 230 | 150 | 1248 | - - - | 1338 | - - - | 1217 | - - - | 1097 | - - - | 759 | - - - | 643 | - - - | 894 | - - - |
| | | IMPRLVLY 230 | 150 | 1398 | - - - | 1188 | - - - | 1295 | - - - | 1243 | - - - | 906 | - - - | 651 | - - - | 891 | - - - |
| | | MIGUEL 230 | 150 | 1142 | - - - | 1034 | - - - | 899 | - - - | 971 | - - - | 696 | - - - | 573 | - - - | 784 | - - - |
| | | MISSION 230 | 150 | 1136 | - - - | 1100 | - - - | 883 | - - - | 1013 | - - - | 701 | - - - | 584 | - - - | 790 | - - - |
| | | SANLUSRY 230 | 150 | 1605 | - - - | 1661 | - - - | 1395 | - - - | 1385 | - - - | 861 | - - - | 713 | - - - | 977 | - - - |
| | | SOUTHBAY 69 | 150 | 326 | - - - | 348 | - - - | 289 | 192% | 316 | - - - | 293 | 195% | 302 | - - - | 323 | - - - |
| | | SYCAMORE 230 | 150 | 1107 | - - - | 1157 | - - - | 892 | - - - | 932 | - - - | 710 | - - - | 585 | - - - | 804 | - - - |
| | | DEVERS 230 | 300 | 1466 | - - - | 1291 | - - - | 1445 | - - - | 1052 | - - - | 637 | - - - | 414 | 138% | 688 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2903 | - - - | 1551 | - - - | 976 | - - - | 1735 | - - - |
| | | MIRALOMW 230 | 300 | 2430 | - - - | 2328 | - - - | 2437 | - - - | 2206 | - - - | 1202 | - - - | 817 | - - - | 1343 | - - - |
| | | S.ONOFRE 230 | 300 | 1995 | - - - | 2035 | - - - | 1815 | - - - | 1584 | - - - | 972 | - - - | 776 | - - - | 1097 | - - - |
| | | SERRANO 230 | 300 | 2492 | - - - | 2413 | - - - | 2481 | - - - | 2179 | - - - | 1191 | - - - | 843 | - - - | 1306 | - - - |
| | | VALYSVC1 500 | 300 | 1726 | - - - | 1564 | - - - | 1840 | - - - | 1472 | - - - | 809 | - - - | 535 | 178% | 933 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2106 | - - - | 1397 | - - - | 2311 | - - - |
| | | VSTA 230 | 300 | 2166 | - - - | 2050 | - - - | 2159 | - - - | 1784 | - - - | 965 | - - - | 650 | - - - | 1093 | - - - |
| | | PADUA 230 | 300 | 1125 | - - - | 1099 | - - - | 1120 | - - - | 1107 | - - - | 826 | - - - | 681 | - - - | 908 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 26 | | 24 | | 22 | | 25 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| ivng | Imperial Valley - N. Gila 500 #: | HRD-230 230 | 100 | 887 | - - - | 710 | - - - | 690 | - - - | 850 | - - - | 634 | - - - | 641 | - - - | 688 | - - - |
| | | MTP-230 230 | 100 | 896 | - - - | 719 | - - - | 679 | - - - | 913 | - - - | 667 | - - - | 675 | - - - | 716 | - - - |
| | | ROA-230 230 | 100 | 878 | - - - | 762 | - - - | 845 | - - - | 1049 | - - - | 684 | - - - | 662 | - - - | 785 | - - - |
| | | TJI-230 230 | 100 | 924 | - - - | 740 | - - - | 696 | - - - | 959 | - - - | 677 | - - - | 685 | - - - | 726 | - - - |
| | | COACHELA 230 | 100 | 697 | - - - | 816 | - - - | 815 | - - - | 607 | - - - | 827 | - - - | 587 | - - - | 666 | - - - |
| | | ELCENTSW 230 | 100 | 578 | - - - | 838 | - - - | 965 | - - - | 497 | - - - | 665 | - - - | 602 | - - - | 719 | - - - |
| | | HIGHLINE 230 | 100 | 444 | - - - | 826 | - - - | 915 | - - - | 346 | - - - | 662 | - - - | 586 | - - - | 684 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 724 | - - - | 900 | - - - | NA | NA | 590 | - - - | 547 | - - - | 693 | - - - |
| | | ESCNDIDO 230 | 150 | 1227 | - - - | 1304 | - - - | 1211 | - - - | 1214 | - - - | 822 | - - - | 828 | - - - | 921 | - - - |
| | | IMPRLVLY 230 | 150 | 1086 | - - - | 881 | - - - | 1043 | - - - | 1183 | - - - | 707 | - - - | 670 | - - - | 820 | - - - |
| | | MIGUEL 230 | 150 | 1124 | - - - | 891 | - - - | 857 | - - - | 1192 | - - - | 684 | - - - | 685 | - - - | 776 | - - - |
| | | MISSION 230 | 150 | 1154 | - - - | 1036 | - - - | 883 | - - - | 1190 | - - - | 733 | - - - | 738 | - - - | 798 | - - - |
| | | SANLUSRY 230 | 150 | 1544 | - - - | 1608 | - - - | 1387 | - - - | 1492 | - - - | 955 | - - - | 964 | - - - | 1020 | - - - |
| | | SOUTHBAY 69 | 150 | 346 | - - - | 352 | - - - | 288 | 192% | 336 | - - - | 297 | 198% | 301 | - - - | 305 | - - - |
| | | SYCAMORE 230 | 150 | 1144 | - - - | 1077 | - - - | 894 | - - - | 1105 | - - - | 733 | - - - | 736 | - - - | 815 | - - - |
| | | DEVERS 230 | 300 | 1576 | - - - | 1533 | - - - | 1632 | - - - | 864 | - - - | 773 | - - - | 761 | - - - | 877 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2167 | - - - | 1688 | - - - | 1702 | - - - | 1970 | - - - |
| | | MIRALOMW 230 | 300 | 2308 | - - - | 2365 | - - - | 2443 | - - - | 1687 | - - - | 1309 | - - - | 1300 | - - - | 1484 | - - - |
| | | S.ONOFRE 230 | 300 | 1916 | - - - | 1994 | - - - | 1802 | - - - | 1611 | - - - | 1112 | - - - | 1125 | - - - | 1178 | - - - |
| | | SERRANO 230 | 300 | 2332 | - - - | 2413 | - - - | 2484 | - - - | 1736 | - - - | 1314 | - - - | 1308 | - - - | 1487 | - - - |
| | | VALYSVC1 500 | 300 | 1780 | - - - | 1729 | - - - | 1970 | - - - | 1149 | - - - | 913 | - - - | 906 | - - - | 1093 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2910 | - - - | 2287 | - - - | 2262 | - - - | 2626 | - - - |
| | | VSTA 230 | 300 | 2133 | - - - | 2164 | - - - | 2224 | - - - | 1379 | - - - | 1090 | - - - | 1079 | - - - | 1251 | - - - |
| | | PADUA 230 | 300 | 1094 | - - - | 1104 | - - - | 1117 | - - - | 939 | - - - | 860 | - - - | 857 | - - - | 927 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 26 | | 25 | | 26 | | 25 | | 25 | | 26 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| | | | | | | | | See Note 3 | | | | | | | | See Note 3 | |
| ivml | Imperial Valley - Miguel 500 #1 | HRD-230 230 | 100 | 243 | - - - | 260 | - - - | 315 | - - - | 265 | - - - | 320 | - - - | 296 | - - - | 452 | - - - |
| | | MTP-230 230 | 100 | 217 | - - - | 238 | - - - | 283 | - - - | 306 | - - - | 315 | - - - | 292 | - - - | 447 | - - - |
| | | ROA-230 230 | 100 | 800 | - - - | 543 | - - - | 851 | - - - | 704 | - - - | 533 | - - - | 468 | - - - | 755 | - - - |
| | | TJI-230 230 | 100 | 215 | - - - | 238 | - - - | 281 | - - - | 308 | - - - | 317 | - - - | 293 | - - - | 450 | - - - |
| | | COACHELA 230 | 100 | 666 | - - - | 664 | - - - | 751 | - - - | 576 | - - - | 524 | - - - | 365 | - - - | 558 | - - - |
| | | ELCENTSW 230 | 100 | 593 | - - - | 725 | - - - | 1097 | - - - | 515 | - - - | 580 | - - - | 468 | - - - | 713 | - - - |
| | | HIGHLINE 230 | 100 | 435 | - - - | 705 | - - - | 973 | - - - | 350 | - - - | 532 | - - - | 417 | - - - | 638 | - - - |
| | | NEWSF230 230 | 100 | 0 | NA | 509 | - - - | 963 | - - - | NA | NA | 451 | - - - | 373 | - - - | 665 | - - - |
| | | ESCNDIDO 230 | 150 | 327 | - - - | 413 | - - - | 393 | - - - | 429 | - - - | 378 | - - - | 353 | - - - | 544 | - - - |
| | | IMPRLVLY 230 | 150 | 1137 | - - - | 702 | - - - | 1184 | - - - | 1011 | - - - | 628 | - - - | 543 | - - - | 850 | - - - |
| | | MIGUEL 230 | 150 | 192 | 128% | 224 | 149% | 215 | 143% | 328 | - - - | 295 | 197% | 277 | 184% | 411 | - - - |
| | | MISSION 230 | 150 | 215 | 144% | 256 | 171% | 243 | 162% | 358 | - - - | 322 | - - - | 301 | - - - | 446 | - - - |
| | | SANLUSRY 230 | 150 | 449 | - - - | 550 | - - - | 451 | - - - | 497 | - - - | 438 | - - - | 409 | - - - | 601 | - - - |
| | | SOUTHBAY 69 | 150 | 144 | 96% | 171 | 114% | 160 | 107% | 244 | 163% | 233 | 155% | 222 | 148% | 272 | 181% |
| | | SYCAMORE 230 | 150 | 224 | 149% | 273 | 182% | 257 | 171% | 353 | - - - | 319 | - - - | 295 | 197% | 458 | - - - |
| | | DEVERS 230 | 300 | 1558 | - - - | 1390 | - - - | 1571 | - - - | 828 | - - - | 522 | 174% | 480 | 160% | 745 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1827 | - - - | 1059 | - - - | 1029 | - - - | 1582 | - - - |
| | | MIRALOMW 230 | 300 | 2155 | - - - | 2148 | - - - | 1945 | - - - | 1345 | - - - | 830 | - - - | 802 | - - - | 1166 | - - - |
| | | S.ONOFRE 230 | 300 | 666 | - - - | 781 | - - - | 634 | - - - | 637 | - - - | 540 | 180% | 507 | 169% | 729 | - - - |
| | | SERRANO 230 | 300 | 1814 | - - - | 1900 | - - - | 1614 | - - - | 1251 | - - - | 812 | - - - | 786 | - - - | 1128 | - - - |
| | | VALYSVC1 500 | 300 | 1750 | - - - | 1610 | - - - | 1487 | - - - | 1037 | - - - | 574 | 191% | 558 | 186% | 865 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2469 | - - - | 1516 | - - - | 1464 | - - - | 2147 | - - - |
| | | VSTA 230 | 300 | 2062 | - - - | 1956 | - - - | 1976 | - - - | 1188 | - - - | 679 | - - - | 652 | - - - | 998 | - - - |
| | | PADUA 230 | 300 | 1071 | - - - | 1075 | - - - | 1086 | - - - | 903 | - - - | 708 | - - - | 688 | - - - | 848 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 26 | | 24 | | 23 | | 25 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| lumo | Lugo - Mohave 500 | HRD-230 230 | 100 | 857 | - - - | 751 | - - - | 705 | - - - | 768 | - - - | 651 | - - - | 641 | - - - | 705 | - - - |
| | | MTP-230 230 | 100 | 865 | - - - | 743 | - - - | 685 | - - - | 832 | - - - | 675 | - - - | 661 | - - - | 734 | - - - |
| | | ROA-230 230 | 100 | 971 | - - - | 936 | - - - | 968 | - - - | 1125 | - - - | 888 | - - - | 836 | - - - | 1008 | - - - |
| | | TJI-230 230 | 100 | 889 | - - - | 768 | - - - | 701 | - - - | 876 | - - - | 682 | - - - | 669 | - - - | 752 | - - - |
| | | COACHELA 230 | 100 | 705 | - - - | 791 | - - - | 808 | - - - | 737 | - - - | 875 | - - - | 573 | - - - | 713 | - - - |
| | | ELCENTSW 230 | 100 | 580 | - - - | 1010 | - - - | 1100 | - - - | 526 | - - - | 882 | - - - | 762 | - - - | 936 | - - - |
| | | HIGHLINE 230 | 100 | 451 | - - - | 914 | - - - | 963 | - - - | 408 | - - - | 791 | - - - | 665 | - - - | 796 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 863 | - - - | 994 | - - - | NA | NA | 751 | - - - | 686 | - - - | 834 | - - - |
| | | ESCNDIDO 230 | 150 | 1269 | - - - | 1358 | - - - | 1237 | - - - | 1209 | - - - | 806 | - - - | 785 | - - - | 1017 | - - - |
| | | IMPRLVLY 230 | 150 | 1347 | - - - | 1163 | - - - | 1281 | - - - | 1450 | - - - | 997 | - - - | 906 | - - - | 1142 | - - - |
| | | MIGUEL 230 | 150 | 1164 | - - - | 1039 | - - - | 918 | - - - | 1139 | - - - | 750 | - - - | 717 | - - - | 901 | - - - |
| | | MISSION 230 | 150 | 1167 | - - - | 1121 | - - - | 907 | - - - | 1159 | - - - | 748 | - - - | 724 | - - - | 885 | - - - |
| | | SANLUSRY 230 | 150 | 1627 | - - - | 1684 | - - - | 1417 | - - - | 1544 | - - - | 925 | - - - | 898 | - - - | 1125 | - - - |
| | | SOUTHBAY 69 | 150 | 335 | - - - | 354 | - - - | 294 | 196% | 344 | - - - | 288 | 192% | 286 | 191% | 311 | - - - |
| | | SYCAMORE 230 | 150 | 1138 | - - - | 1176 | - - - | 914 | - - - | 1054 | - - - | 763 | - - - | 732 | - - - | 904 | - - - |
| | | DEVERS 230 | 300 | 1654 | - - - | 1502 | - - - | 1643 | - - - | 1316 | - - - | 787 | - - - | 774 | - - - | 1030 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1704 | - - - | 1707 | - - - | 2306 | - - - |
| | | MIRALOMW 230 | 300 | 2403 | - - - | 2313 | - - - | 2404 | - - - | 2368 | - - - | 1276 | - - - | 1276 | - - - | 1675 | - - - |
| | | S.ONOFRE 230 | 300 | 2014 | - - - | 2051 | - - - | 1840 | - - - | 1723 | - - - | 1043 | - - - | 1023 | - - - | 1285 | - - - |
| | | SERRANO 230 | 300 | 2463 | - - - | 2389 | - - - | 2459 | - - - | 2320 | - - - | 1276 | - - - | 1280 | - - - | 1627 | - - - |
| | | VALYSVC1 500 | 300 | 1879 | - - - | 1718 | - - - | 1987 | - - - | 1694 | - - - | 926 | - - - | 930 | - - - | 1299 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2270 | - - - | 2276 | - - - | 2959 | - - - |
| | | VSTA 230 | 300 | 2218 | - - - | 2113 | - - - | 2202 | - - - | 1947 | - - - | 1084 | - - - | 1079 | - - - | 1438 | - - - |
| | | PADUA 230 | 300 | 1107 | - - - | 1081 | - - - | 1101 | - - - | 1116 | - - - | 848 | - - - | 849 | - - - | 968 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 28 | | 25 | | 25 | | 26 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| lumi | Lugo - Mira Loma 500 | HRD-230 230 | 100 | 867 | - - - | 769 | - - - | 723 | - - - | 782 | - - - | 695 | - - - | 688 | - - - | 696 | - - - |
| | | MTP-230 230 | 100 | 873 | - - - | 762 | - - - | 703 | - - - | 848 | - - - | 732 | - - - | 721 | - - - | 734 | - - - |
| | | ROA-230 230 | 100 | 986 | - - - | 960 | - - - | 999 | - - - | 1148 | - - - | 982 | - - - | 927 | - - - | 1026 | - - - |
| | | TJI-230 230 | 100 | 901 | - - - | 784 | - - - | 720 | - - - | 893 | - - - | 740 | - - - | 729 | - - - | 742 | - - - |
| | | COACHELA 230 | 100 | 700 | - - - | 822 | - - - | 836 | - - - | 766 | - - - | 1022 | - - - | 642 | - - - | 752 | - - - |
| | | ELCENTSW 230 | 100 | 583 | - - - | 1053 | - - - | 1150 | - - - | 532 | - - - | 988 | - - - | 855 | - - - | 975 | - - - |
| | | HIGHLINE 230 | 100 | 447 | - - - | 948 | - - - | 996 | - - - | 417 | - - - | 858 | - - - | 739 | - - - | 823 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 886 | - - - | 1025 | - - - | NA | NA | 808 | - - - | 751 | - - - | 861 | - - - |
| | | ESCNDIDO 230 | 150 | 1296 | - - - | 1405 | - - - | 1304 | - - - | 1245 | - - - | 919 | - - - | 905 | - - - | 1025 | - - - |
| | | IMPRLVLY 230 | 150 | 1369 | - - - | 1216 | - - - | 1349 | - - - | 1480 | - - - | 1127 | - - - | 1023 | - - - | 1178 | - - - |
| | | MIGUEL 230 | 150 | 1187 | - - - | 1083 | - - - | 963 | - - - | 1175 | - - - | 864 | - - - | 835 | - - - | 903 | - - - |
| | | MISSION 230 | 150 | 1191 | - - - | 1162 | - - - | 947 | - - - | 1199 | - - - | 868 | - - - | 844 | - - - | 885 | - - - |
| | | SANLUSRY 230 | 150 | 1668 | - - - | 1753 | - - - | 1499 | - - - | 1602 | - - - | 1094 | - - - | 1069 | - - - | 1167 | - - - |
| | | SOUTHBAY 69 | 150 | 339 | - - - | 361 | - - - | 300 | 200% | 351 | - - - | 302 | - - - | 301 | - - - | 299 | 199% |
| | | SYCAMORE 230 | 150 | 1160 | - - - | 1224 | - - - | 954 | - - - | 1090 | - - - | 889 | - - - | 857 | - - - | 907 | - - - |
| | | DEVERS 230 | 300 | 1721 | - - - | 1570 | - - - | 1723 | - - - | 1431 | - - - | 971 | - - - | 955 | - - - | 1144 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2233 | - - - | 2239 | - - - | 2687 | - - - |
| | | MIRALOMW 230 | 300 | 2620 | - - - | 2521 | - - - | 2611 | - - - | 2601 | - - - | 1623 | - - - | 1625 | - - - | 1897 | - - - |
| | | S.ONOFRE 230 | 300 | 2074 | - - - | 2138 | - - - | 1954 | - - - | 1784 | - - - | 1235 | - - - | 1222 | - - - | 1337 | - - - |
| | | SERRANO 230 | 300 | 2618 | - - - | 2558 | - - - | 2642 | - - - | 2489 | - - - | 1606 | - - - | 1608 | - - - | 1801 | - - - |
| | | VALYSVC1 500 | 300 | 1984 | - - - | 1833 | - - - | 2097 | - - - | 1824 | - - - | 1160 | - - - | 1166 | - - - | 1460 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2884 | - - - | 2900 | - - - | 3000 | - - - |
| | | VSTA 230 | 300 | 2356 | - - - | 2272 | - - - | 2341 | - - - | 2098 | - - - | 1372 | - - - | 1368 | - - - | 1609 | - - - |
| | | PADUA 230 | 300 | 1160 | - - - | 1140 | - - - | 1154 | - - - | 1175 | - - - | 956 | - - - | 955 | - - - | 1034 | - - - |
| | | IRONMTP1 6.9 | | 25 | | 26 | | 26 | | 28 | | 26 | | 26 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | MVar | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| mise | Mira Loma - Serrano 500 kV | HRD-230 230 | 100 | 863 | - - - | 762 | - - - | 715 | - - - | 780 | - - - | 687 | - - - | 679 | - - - | 688 | - - - |
| | | MTP-230 230 | 100 | 869 | - - - | 755 | - - - | 695 | - - - | 846 | - - - | 719 | - - - | 708 | - - - | 721 | - - - |
| | | ROA-230 230 | 100 | 980 | - - - | 949 | - - - | 982 | - - - | 1145 | - - - | 961 | - - - | 909 | - - - | 1001 | - - - |
| | | TJI-230 230 | 100 | 896 | - - - | 777 | - - - | 711 | - - - | 890 | - - - | 726 | - - - | 716 | - - - | 727 | - - - |
| | | COACHELA 230 | 100 | 689 | - - - | 804 | - - - | 823 | - - - | 761 | - - - | 974 | - - - | 629 | - - - | 739 | - - - |
| | | ELCENTSW 230 | 100 | 582 | - - - | 1032 | - - - | 1122 | - - - | 531 | - - - | 963 | - - - | 835 | - - - | 951 | - - - |
| | | HIGHLINE 230 | 100 | 443 | - - - | 932 | - - - | 979 | - - - | 416 | - - - | 843 | - - - | 724 | - - - | 810 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 876 | - - - | 1005 | - - - | NA | NA | 796 | - - - | 739 | - - - | 842 | - - - |
| | | ESCNDIDO 230 | 150 | 1287 | - - - | 1387 | - - - | 1271 | - - - | 1238 | - - - | 888 | - - - | 873 | - - - | 973 | - - - |
| | | IMPRLVLY 230 | 150 | 1361 | - - - | 1192 | - - - | 1310 | - - - | 1476 | - - - | 1098 | - - - | 998 | - - - | 1141 | - - - |
| | | MIGUEL 230 | 150 | 1178 | - - - | 1065 | - - - | 940 | - - - | 1170 | - - - | 836 | - - - | 806 | - - - | 869 | - - - |
| | | MISSION 230 | 150 | 1182 | - - - | 1146 | - - - | 928 | - - - | 1191 | - - - | 835 | - - - | 812 | - - - | 849 | - - - |
| | | SANLUSRY 230 | 150 | 1652 | - - - | 1723 | - - - | 1457 | - - - | 1585 | - - - | 1039 | - - - | 1017 | - - - | 1100 | - - - |
| | | SOUTHBAY 69 | 150 | 338 | - - - | 358 | - - - | 298 | 198% | 350 | - - - | 299 | 199% | 298 | 199% | 296 | 197% |
| | | SYCAMORE 230 | 150 | 1152 | - - - | 1204 | - - - | 935 | - - - | 1084 | - - - | 854 | - - - | 825 | - - - | 869 | - - - |
| | | DEVERS 230 | 300 | 1660 | - - - | 1515 | - - - | 1669 | - - - | 1404 | - - - | 917 | - - - | 903 | - - - | 1109 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2170 | - - - | 2178 | - - - | 2662 | - - - |
| | | MIRALOMW 230 | 300 | 2471 | - - - | 2398 | - - - | 2475 | - - - | 2551 | - - - | 1612 | - - - | 1615 | - - - | 1876 | - - - |
| | | S.ONOFRE 230 | 300 | 2049 | - - - | 2096 | - - - | 1887 | - - - | 1761 | - - - | 1177 | - - - | 1159 | - - - | 1269 | - - - |
| | | SERRANO 230 | 300 | 2338 | - - - | 2265 | - - - | 2376 | - - - | 2249 | - - - | 1394 | - - - | 1399 | - - - | 1599 | - - - |
| | | VALYSVC1 500 | 300 | 1764 | - - - | 1610 | - - - | 1911 | - - - | 1643 | - - - | 1007 | - - - | 1013 | - - - | 1309 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2824 | - - - | 2837 | - - - | 3000 | - - - |
| | | VSTA 230 | 300 | 2290 | - - - | 2212 | - - - | 2285 | - - - | 2085 | - - - | 1320 | - - - | 1317 | - - - | 1584 | - - - |
| | | PADUA 230 | 300 | 1135 | - - - | 1118 | - - - | 1133 | - - - | 1168 | - - - | 942 | - - - | 942 | - - - | 1027 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 26 | | 26 | | 28 | | 26 | | 26 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | MVar | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| luvi | Lugo - Victorville 500 | HRD-230 230 | 100 | 851 | - - - | 745 | - - - | 695 | - - - | 760 | - - - | 637 | - - - | 626 | - - - | 708 | - - - |
| | | MTP-230 230 | 100 | 859 | - - - | 735 | - - - | 675 | - - - | 811 | - - - | 656 | - - - | 642 | - - - | 739 | - - - |
| | | ROA-230 230 | 100 | 963 | - - - | 925 | - - - | 949 | - - - | 1109 | - - - | 857 | - - - | 806 | - - - | 1002 | - - - |
| | | TJI-230 230 | 100 | 883 | - - - | 761 | - - - | 691 | - - - | 842 | - - - | 664 | - - - | 650 | - - - | 770 | - - - |
| | | COACHELA 230 | 100 | 706 | - - - | 779 | - - - | 783 | - - - | 722 | - - - | 822 | - - - | 548 | - - - | 702 | - - - |
| | | ELCENTSW 230 | 100 | 578 | - - - | 993 | - - - | 1068 | - - - | 523 | - - - | 846 | - - - | 732 | - - - | 922 | - - - |
| | | HIGHLINE 230 | 100 | 452 | - - - | 902 | - - - | 940 | - - - | 404 | - - - | 765 | - - - | 640 | - - - | 788 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 855 | - - - | 975 | - - - | NA | NA | 728 | - - - | 659 | - - - | 824 | - - - |
| | | ESCNDIDO 230 | 150 | 1262 | - - - | 1345 | - - - | 1212 | - - - | 1201 | - - - | 780 | - - - | 758 | - - - | 1020 | - - - |
| | | IMPRLVLY 230 | 150 | 1334 | - - - | 1141 | - - - | 1241 | - - - | 1430 | - - - | 954 | - - - | 868 | - - - | 1129 | - - - |
| | | MIGUEL 230 | 150 | 1152 | - - - | 1021 | - - - | 896 | - - - | 1119 | - - - | 719 | - - - | 686 | - - - | 903 | - - - |
| | | MISSION 230 | 150 | 1157 | - - - | 1105 | - - - | 888 | - - - | 1146 | - - - | 720 | - - - | 695 | - - - | 889 | - - - |
| | | SANLUSRY 230 | 150 | 1616 | - - - | 1664 | - - - | 1388 | - - - | 1531 | - - - | 892 | - - - | 867 | - - - | 1130 | - - - |
| | | SOUTHBAY 69 | 150 | 333 | - - - | 352 | - - - | 291 | 194% | 341 | - - - | 284 | 189% | 282 | 188% | 316 | - - - |
| | | SYCAMORE 230 | 150 | 1129 | - - - | 1158 | - - - | 896 | - - - | 1043 | - - - | 733 | - - - | 701 | - - - | 907 | - - - |
| | | DEVERS 230 | 300 | 1634 | - - - | 1479 | - - - | 1570 | - - - | 1259 | - - - | 735 | - - - | 721 | - - - | 998 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1560 | - - - | 1562 | - - - | 2198 | - - - |
| | | MIRALOMW 230 | 300 | 2308 | - - - | 2235 | - - - | 2304 | - - - | 2300 | - - - | 1241 | - - - | 1241 | - - - | 1693 | - - - |
| | | S.ONOFRE 230 | 300 | 1997 | - - - | 2029 | - - - | 1797 | - - - | 1718 | - - - | 1003 | - - - | 988 | - - - | 1292 | - - - |
| | | SERRANO 230 | 300 | 2398 | - - - | 2342 | - - - | 2371 | - - - | 2320 | - - - | 1234 | - - - | 1237 | - - - | 1642 | - - - |
| | | VALYSVC1 500 | 300 | 1823 | - - - | 1664 | - - - | 1910 | - - - | 1627 | - - - | 862 | - - - | 865 | - - - | 1263 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2156 | - - - | 2161 | - - - | 2937 | - - - |
| | | VSTA 230 | 300 | 2135 | - - - | 2040 | - - - | 2098 | - - - | 1889 | - - - | 1018 | - - - | 1012 | - - - | 1408 | - - - |
| | | PADUA 230 | 300 | 1090 | - - - | 1065 | - - - | 1079 | - - - | 1114 | - - - | 839 | - - - | 839 | - - - | 974 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 28 | | 25 | | 25 | | 26 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | MVar | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| omtj | Otay Mesa - Tijuana 230 | HRD-230 230 | 100 | 353 | - - - | 272 | - - - | 281 | - - - | 357 | - - - | 350 | - - - | 349 | - - - | 354 | - - - |
| | | MTP-230 230 | 100 | 308 | - - - | 235 | - - - | 243 | - - - | 313 | - - - | 307 | - - - | 307 | - - - | 310 | - - - |
| | | ROA-230 230 | 100 | 920 | - - - | 799 | - - - | 851 | - - - | 1057 | - - - | 971 | - - - | 923 | - - - | 1037 | - - - |
| | | TJI-230 230 | 100 | 303 | - - - | 231 | - - - | 239 | - - - | 308 | - - - | 302 | - - - | 302 | - - - | 305 | - - - |
| | | COACHELA 230 | 100 | 689 | - - - | 754 | - - - | 769 | - - - | 752 | - - - | 925 | - - - | 583 | - - - | 725 | - - - |
| | | ELCENTSW 230 | 100 | 567 | - - - | 910 | - - - | 1016 | - - - | 524 | - - - | 918 | - - - | 780 | - - - | 970 | - - - |
| | | HIGHLINE 230 | 100 | 442 | - - - | 832 | - - - | 903 | - - - | 412 | - - - | 799 | - - - | 665 | - - - | 806 | - - - |
| | | NEWSF230 230 | 100 | NA | NA | 780 | - - - | 928 | - - - | NA | NA | 717 | - - - | 647 | - - - | 826 | - - - |
| | | ESCNDIDO 230 | 150 | 1170 | - - - | 1217 | - - - | 1054 | - - - | 1102 | - - - | 745 | - - - | 717 | - - - | 936 | - - - |
| | | IMPRLVLY 230 | 150 | 1270 | - - - | 1041 | - - - | 1190 | - - - | 1477 | - - - | 1053 | - - - | 944 | - - - | 1225 | - - - |
| | | MIGUEL 230 | 150 | 982 | - - - | 868 | - - - | 744 | - - - | 1012 | - - - | 681 | - - - | 648 | - - - | 821 | - - - |
| | | MISSION 230 | 150 | 969 | - - - | 948 | - - - | 738 | - - - | 1018 | - - - | 676 | - - - | 650 | - - - | 800 | - - - |
| | | SANLUSRY 230 | 150 | 1494 | - - - | 1497 | - - - | 1204 | - - - | 1404 | - - - | 868 | - - - | 835 | - - - | 1059 | - - - |
| | | SOUTHBAY 69 | 150 | 326 | - - - | 337 | - - - | 278 | 186% | 330 | - - - | 278 | 186% | 276 | 184% | 309 | - - - |
| | | SYCAMORE 230 | 150 | 944 | - - - | 994 | - - - | 755 | - - - | 927 | - - - | 695 | - - - | 660 | - - - | 818 | - - - |
| | | DEVERS 230 | 300 | 1664 | - - - | 1688 | - - - | 1621 | - - - | 1391 | - - - | 883 | - - - | 862 | - - - | 1100 | - - - |
| | | LUGO 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1991 | - - - | 1951 | - - - | 2543 | - - - |
| | | MIRALOMW 230 | 300 | 2570 | - - - | 2445 | - - - | 2543 | - - - | 2504 | - - - | 1428 | - - - | 1457 | - - - | 1807 | - - - |
| | | S.ONOFRE 230 | 300 | 1928 | - - - | 1911 | - - - | 1602 | - - - | 1629 | - - - | 1007 | - - - | 973 | - - - | 1241 | - - - |
| | | SERRANO 230 | 300 | 2581 | - - - | 2516 | - - - | 2513 | - - - | 2432 | - - - | 1421 | - - - | 1413 | - - - | 1728 | - - - |
| | | VALYSVC1 500 | 300 | 1958 | - - - | 1788 | - - - | 2013 | - - - | 1781 | - - - | 1033 | - - - | 1034 | - - - | 1371 | - - - |
| | | VINCENT 500 | 300 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2607 | - - - | 2573 | - - - | 3000 | - - - |
| | | VSTA 230 | 300 | 2322 | - - - | 2205 | - - - | 2259 | - - - | 2052 | - - - | 1219 | - - - | 1200 | - - - | 1545 | - - - |
| | | PADUA 230 | 300 | 1151 | - - - | 1125 | - - - | 1134 | - - - | 1162 | - - - | 922 | - - - | 921 | - - - | 1025 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 26 | | 26 | | 28 | | 26 | | 25 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| **DOUBLE CONTINGENCIES:** | | | | | | | | | | | | | | | | | |
| lu-vcvi | Lugo-Vincent & Lugo - Victorvil | HRD-230 230 | 50 | 850 | - - - | 742 | - - - | 696 | - - - | 756 | - - - | 649 | - - - | 638 | - - - | 694 | - - - |
| | | MTP-230 230 | 50 | 858 | - - - | 732 | - - - | 675 | - - - | 807 | - - - | 665 | - - - | 650 | - - - | 729 | - - - |
| | | ROA-230 230 | 50 | 962 | - - - | 918 | - - - | 951 | - - - | 1104 | - - - | 867 | - - - | 814 | - - - | 969 | - - - |
| | | TJI-230 230 | 50 | 882 | - - - | 757 | - - - | 691 | - - - | 838 | - - - | 673 | - - - | 659 | - - - | 737 | - - - |
| | | COACHELA 230 | 50 | 698 | - - - | 768 | - - - | 794 | - - - | 713 | - - - | 779 | - - - | 535 | - - - | 678 | - - - |
| | | ELCENTSW 230 | 50 | 577 | - - - | 981 | - - - | 1074 | - - - | 522 | - - - | 842 | - - - | 729 | - - - | 890 | - - - |
| | | HIGHLINE 230 | 50 | 450 | - - - | 893 | - - - | 946 | - - - | 401 | - - - | 756 | - - - | 635 | - - - | 766 | - - - |
| | | NEWSF230 230 | 50 | NA | NA | 849 | - - - | 977 | - - - | NA | NA | 729 | - - - | 660 | - - - | 803 | - - - |
| | | ESCNDIDO 230 | 75 | 1254 | - - - | 1331 | - - - | 1205 | - - - | 1186 | - - - | 773 | - - - | 755 | - - - | 960 | - - - |
| | | IMPRLVLY 230 | 75 | 1332 | - - - | 1129 | - - - | 1245 | - - - | 1420 | - - - | 959 | - - - | 870 | - - - | 1082 | - - - |
| | | MIGUEL 230 | 75 | 1148 | - - - | 1011 | - - - | 895 | - - - | 1109 | - - - | 722 | - - - | 692 | - - - | 861 | - - - |
| | | MISSION 230 | 75 | 1153 | - - - | 1096 | - - - | 886 | - - - | 1130 | - - - | 722 | - - - | 699 | - - - | 842 | - - - |
| | | SANLUSRY 230 | 75 | 1602 | - - - | 1645 | - - - | 1379 | - - - | 1503 | - - - | 868 | - - - | 852 | - - - | 1053 | - - - |
| | | SOUTHBAY 69 | 75 | 333 | - - - | 351 | - - - | 291 | - - - | 340 | - - - | 297 | - - - | 295 | - - - | 310 | - - - |
| | | SYCAMORE 230 | 75 | 1125 | - - - | 1148 | - - - | 895 | - - - | 1031 | - - - | 734 | - - - | 705 | - - - | 859 | - - - |
| | | DEVERS 230 | 150 | 1592 | - - - | 1438 | - - - | 1584 | - - - | 1215 | - - - | 677 | - - - | 668 | - - - | 933 | - - - |
| | | LUGO 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2883 | - - - | 1306 | - - - | 1310 | - - - | 1856 | - - - |
| | | MIRALOMW 230 | 150 | 2207 | - - - | 2130 | - - - | 2238 | - - - | 2168 | - - - | 1096 | - - - | 1098 | - - - | 1510 | - - - |
| | | S.ONOFRE 230 | 150 | 1975 | - - - | 2001 | - - - | 1782 | - - - | 1685 | - - - | 962 | - - - | 953 | - - - | 1197 | - - - |
| | | SERRANO 230 | 150 | 2316 | - - - | 2244 | - - - | 2324 | - - - | 2171 | - - - | 1101 | - - - | 1105 | - - - | 1482 | - - - |
| | | VALYSVC1 500 | 150 | 1760 | - - - | 1604 | - - - | 1887 | - - - | 1561 | - - - | 775 | - - - | 779 | - - - | 1147 | - - - |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2113 | - - - | 2124 | - - - | 2836 | - - - |
| | | VSTA 230 | 150 | 2051 | - - - | 1949 | - - - | 2054 | - - - | 1794 | - - - | 905 | - - - | 903 | - - - | 1268 | - - - |
| | | PADUA 230 | 150 | 1061 | - - - | 1033 | - - - | 1059 | - - - | 1070 | - - - | 780 | - - - | 780 | - - - | 914 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 28 | | 25 | | 25 | | 26 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| lumi23 | Lugo - Mira Loma 500 Ckts 2 & | HRD-230 230 | 50 | 846 | - - - | 740 | - - - | 685 | - - - | 764 | - - - | 640 | - - - | 629 | - - - | 707 | - - - |
| | | MTP-230 230 | 50 | 853 | - - - | 730 | - - - | 664 | - - - | 816 | - - - | 658 | - - - | 643 | - - - | 736 | - - - |
| | | ROA-230 230 | 50 | 956 | - - - | 915 | - - - | 939 | - - - | 1119 | - - - | 868 | - - - | 815 | - - - | 1003 | - - - |
| | | TJI-230 230 | 50 | 879 | - - - | 755 | - - - | 680 | - - - | 871 | - - - | 665 | - - - | 651 | - - - | 754 | - - - |
| | | COACHELA 230 | 50 | 684 | - - - | 771 | - - - | 775 | - - - | 726 | - - - | 819 | - - - | 552 | - - - | 701 | - - - |
| | | ELCENTSW 230 | 50 | 576 | - - - | 982 | - - - | 1046 | - - - | 525 | - - - | 857 | - - - | 740 | - - - | 924 | - - - |
| | | HIGHLINE 230 | 50 | 445 | - - - | 891 | - - - | 925 | - - - | 405 | - - - | 773 | - - - | 646 | - - - | 789 | - - - |
| | | NEWSF230 230 | 50 | NA | NA | 848 | - - - | 960 | - - - | NA | NA | 734 | - - - | 665 | - - - | 825 | - - - |
| | | ESCNDIDO 230 | 75 | 1233 | - - - | 1327 | - - - | 1161 | - - - | 1199 | - - - | 768 | - - - | 747 | - - - | 996 | - - - |
| | | IMPRLVLY 230 | 75 | 1320 | - - - | 1128 | - - - | 1208 | - - - | 1440 | - - - | 966 | - - - | 878 | - - - | 1129 | - - - |
| | | MIGUEL 230 | 75 | 1135 | - - - | 1010 | - - - | 870 | - - - | 1130 | - - - | 720 | - - - | 688 | - - - | 895 | - - - |
| | | MISSION 230 | 75 | 1139 | - - - | 1093 | - - - | 863 | - - - | 1148 | - - - | 716 | - - - | 693 | - - - | 874 | - - - |
| | | SANLUSRY 230 | 75 | 1569 | - - - | 1639 | - - - | 1326 | - - - | 1521 | - - - | 869 | - - - | 847 | - - - | 1093 | - - - |
| | | SOUTHBAY 69 | 75 | 331 | - - - | 350 | - - - | 279 | - - - | 343 | - - - | 285 | - - - | 283 | - - - | 315 | - - - |
| | | SYCAMORE 230 | 75 | 1114 | - - - | 1144 | - - - | 872 | - - - | 1045 | - - - | 730 | - - - | 701 | - - - | 892 | - - - |
| | | DEVERS 230 | 150 | 1522 | - - - | 1520 | - - - | 1524 | - - - | 1262 | - - - | 723 | - - - | 712 | - - - | 985 | - - - |
| | | LUGO 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1796 | - - - | 1800 | - - - | 2524 | - - - |
| | | MIRALOMW 230 | 150 | 1952 | - - - | 1997 | - - - | 2002 | - - - | 2102 | - - - | 1118 | - - - | 1118 | - - - | 1528 | - - - |
| | | S.ONOFRE 230 | 150 | 1923 | - - - | 1986 | - - - | 1703 | - - - | 1699 | - - - | 968 | - - - | 952 | - - - | 1240 | - - - |
| | | SERRANO 230 | 150 | 2130 | - - - | 2174 | - - - | 2146 | - - - | 2178 | - - - | 1142 | - - - | 1144 | - - - | 1527 | - - - |
| | | VALYSVC1 500 | 150 | 1664 | - - - | 1590 | - - - | 1800 | - - - | 1606 | - - - | 824 | - - - | 828 | - - - | 1213 | - - - |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2209 | - - - | 2214 | - - - | 3000 | - - - |
| | | VSTA 230 | 150 | 1912 | - - - | 1904 | - - - | 1932 | - - - | 1826 | - - - | 955 | - - - | 952 | - - - | 1330 | - - - |
| | | PADUA 230 | 150 | 1025 | - - - | 1033 | - - - | 1028 | - - - | 1092 | - - - | 805 | - - - | 805 | - - - | 942 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 28 | | 25 | | 25 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| | | | | | | | | | | | | See Note 4 | | See Note 5 | | See Note 6 | |
| dv_east_dlo | Devers - PV & Devers - Harqua | HRD-230 230 | 50 | 722 | - - - | 585 | - - - | 541 | - - - | 383 | - - - | 703 | - - - | 504 | - - - | 296 | - - - |
| | | MTP-230 230 | 50 | 727 | - - - | 587 | - - - | 530 | - - - | 413 | - - - | 737 | - - - | 518 | - - - | 301 | - - - |
| | | ROA-230 230 | 50 | 822 | - - - | 665 | - - - | 685 | - - - | 417 | - - - | 803 | - - - | 443 | - - - | 227 | - - - |
| | - or - | TJI-230 230 | 50 | 745 | - - - | 603 | - - - | 539 | - - - | 423 | - - - | 751 | - - - | 524 | - - - | 303 | - - - |
| Case | | COACHELA 230 | 50 | 548 | - - - | 426 | - - - | 472 | - - - | 523 | - - - | 622 | - - - | 197 | - - - | 140 | - - - |
| la_alt2ad3: | Devers - Midpints 500kV #1 & 2 | ELCENTSW 230 | 50 | 511 | - - - | 628 | - - - | 697 | - - - | 326 | - - - | 719 | - - - | 316 | - - - | 180 | - - - |
| dvmpih_Caps | | HIGHLINE 230 | 50 | 386 | - - - | 563 | - - - | 622 | - - - | 301 | - - - | 646 | - - - | 266 | - - - | 161 | - - - |
| | - or - | NEWSF230 230 | 50 | NA | NA | 612 | - - - | 711 | - - - | NA | NA | 655 | - - - | 294 | - - - | 170 | - - - |
| | | ESCNDIDO 230 | 75 | 1056 | - - - | 1075 | - - - | 912 | - - - | 639 | - - - | 881 | - - - | 535 | - - - | 305 | - - - |
| Case | Devers-Midpints & Devers - IH | IMPRLVLY 230 | 75 | 1127 | - - - | 752 | - - - | 814 | - - - | 459 | - - - | 849 | - - - | 416 | - - - | 214 | - - - |
| la_alt2d3: | | MIGUEL 230 | 75 | 893 | - - - | 717 | - - - | 632 | - - - | 413 | - - - | 778 | - - - | 403 | - - - | 232 | - - - |
| lvmp12_Caps4V | | MISSION 230 | 75 | 919 | - - - | 812 | - - - | 652 | - - - | 502 | - - - | 811 | - - - | 481 | - - - | 281 | - - - |
| | | SANLUSRY 230 | 75 | 1337 | - - - | 1309 | - - - | 1031 | - - - | 765 | - - - | 993 | - - - | 584 | - - - | 334 | - - - |
| | | SOUTHBAY 69 | 75 | 287 | - - - | 305 | - - - | 250 | - - - | 249 | - - - | 355 | - - - | 325 | - - - | 206 | - - - |
| Case | | SYCAMORE 230 | 75 | 904 | - - - | 836 | - - - | 661 | - - - | 496 | - - - | 815 | - - - | 476 | - - - | 296 | - - - |
| la_alt3bd3: | | DEVERS 230 | 150 | 1083 | - - - | 858 | - - - | 914 | - - - | 922 | - - - | 483 | - - - | 306 | - - - | 210 | 140% |
| dvmp12_Caps | | LUGO 500 | 150 | 2942 | - - - | 2626 | - - - | 2860 | - - - | 1164 | - - - | 1187 | - - - | 590 | - - - | 406 | - - - |
| | | MIRALOMW 230 | 150 | 1964 | - - - | 1829 | - - - | 1884 | - - - | 1320 | - - - | 1030 | - - - | 563 | - - - | 383 | - - - |
| | | S.ONOFRE 230 | 150 | 1698 | - - - | 1650 | - - - | 1338 | - - - | 963 | - - - | 1052 | - - - | 579 | - - - | 363 | - - - |
| | | SERRANO 230 | 150 | 2083 | - - - | 1984 | - - - | 1915 | - - - | 1343 | - - - | 1082 | - - - | 598 | - - - | 383 | - - - |
| | | VALYSVC1 500 | 150 | 1263 | - - - | 1110 | - - - | 1259 | - - - | 1062 | - - - | 682 | - - - | 397 | - - - | 264 | 176% |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 1812 | - - - | 1713 | - - - | 878 | - - - | 557 | - - - |
| | | VSTA 230 | 150 | 1643 | - - - | 1486 | - - - | 1586 | - - - | 1185 | - - - | 830 | - - - | 485 | - - - | 333 | - - - |
| | | PADUA 230 | 150 | 1019 | - - - | 1018 | - - - | 1023 | - - - | 971 | - - - | 819 | - - - | 500 | - - - | 350 | - - - |
| | | IRONMTP1 6.9 | | 19 | | 21 | | 21 | | 18 | | 21 | | 17 | | 18 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | MVar | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| pvgen23a | Palo Verde Units 2 & 3 | HRD-230 230 | 50 | 902 | - - - | 790 | - - - | 766 | - - - | 824 | - - - | 824 | - - - | 820 | - - - | 811 | - - - |
| | | MTP-230 230 | 50 | 907 | | 779 | - - - | 741 | - - - | 891 | - - - | 894 | - - - | 889 | - - - | 873 | - - - |
| | | ROA-230 230 | 50 | 1065 | - - - | 1016 | - - - | 1083 | - - - | 1234 | - - - | 1272 | - - - | 1234 | - - - | 1305 | - - - |
| | | TJI-230 230 | 50 | 940 | - - - | 801 | - - - | 768 | - - - | 938 | - - - | 939 | - - - | 933 | - - - | 916 | - - - |
| | | COACHELA 230 | 50 | 740 | - - - | 873 | - - - | 889 | - - - | 898 | - - - | 1510 | - - - | 903 | - - - | 988 | - - - |
| | | ELCENTSW 230 | 50 | 601 | - - - | 1143 | - - - | 1272 | - - - | 554 | - - - | 1335 | - - - | 1186 | - - - | 1314 | - - - |
| | | HIGHLINE 230 | 50 | 463 | - - - | 1011 | - - - | 1065 | - - - | 440 | - - - | 1061 | - - - | 951 | - - - | 1020 | - - - |
| | | NEWSF230 230 | 50 | NA | NA | 939 | - - - | 1105 | - - - | NA | NA | 991 | - - - | 942 | - - - | 1078 | - - - |
| | | ESCNDIDO 230 | 75 | 1346 | - - - | 1432 | - - - | 1446 | - - - | 1326 | - - - | 1233 | - - - | 1224 | - - - | 1398 | - - - |
| | | IMPRLVLY 230 | 75 | 1475 | - - - | 1323 | - - - | 1518 | - - - | 1613 | - - - | 1611 | - - - | 1470 | - - - | 1671 | - - - |
| | | MIGUEL 230 | 75 | 1295 | - - - | 1146 | - - - | 1091 | - - - | 1290 | - - - | 1229 | - - - | 1208 | - - - | 1238 | - - - |
| | | MISSION 230 | 75 | 1269 | - - - | 1201 | - - - | 1058 | - - - | 1305 | - - - | 1239 | - - - | 1221 | - - - | 1197 | - - - |
| | | SANLUSRY 230 | 75 | 1735 | - - - | 1783 | - - - | 1660 | - - - | 1741 | - - - | 1571 | - - - | 1553 | - - - | 1635 | - - - |
| | | SOUTHBAY 69 | 75 | 356 | - - - | 356 | - - - | 316 | - - - | 351 | - - - | 355 | - - - | 353 | - - - | 347 | - - - |
| | | SYCAMORE 230 | 75 | 1231 | - - - | 1276 | - - - | 1062 | - - - | 1164 | - - - | 1303 | - - - | 1278 | - - - | 1212 | - - - |
| | | DEVERS 230 | 150 | 1854 | - - - | 1730 | - - - | 1874 | - - - | 1931 | - - - | 1676 | - - - | 1637 | - - - | 1748 | - - - |
| | | LUGO 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - |
| | | MIRALOMW 230 | 150 | 2537 | - - - | 2544 | - - - | 2668 | - - - | 3000 | - - - | 2553 | - - - | 2556 | - - - | 2713 | - - - |
| | | S.ONOFRE 230 | 150 | 2126 | - - - | 2167 | - - - | 2143 | - - - | 1929 | - - - | 1667 | - - - | 1663 | - - - | 1847 | - - - |
| | | SERRANO 230 | 150 | 2587 | - - - | 2570 | - - - | 2679 | - - - | 3000 | - - - | 2431 | - - - | 2412 | - - - | 2530 | - - - |
| | | VALYSVC1 500 | 150 | 2108 | - - - | 1994 | - - - | 2282 | - - - | 2299 | - - - | 1903 | - - - | 1909 | - - - | 2212 | - - - |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - |
| | | VSTA 230 | 150 | 2380 | - - - | 2348 | - - - | 2417 | - - - | 2588 | - - - | 2169 | - - - | 2161 | - - - | 2301 | - - - |
| | | PADUA 230 | 150 | 1145 | - - - | 1144 | - - - | 1158 | - - - | 1316 | - - - | 1213 | - - - | 1215 | - - - | 1252 | - - - |
| | | IRONMTP1 6.9 | | 25 | | 26 | | 26 | | 29 | | 29 | | 28 | | 29 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | MVar | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| sota12 | Songs - Talega 230kV Ckts 1 & | HRD-230 230 | 50 | 823 | - - - | 713 | - - - | 722 | - - - | 767 | - - - | 680 | - - - | 671 | - - - | 689 | - - - |
| | | MTP-230 230 | 50 | 821 | - - - | 702 | - - - | 702 | - - - | 830 | - - - | 710 | - - - | 698 | - - - | 725 | - - - |
| | | ROA-230 230 | 50 | 949 | - - - | 902 | - - - | 989 | - - - | 1129 | - - - | 955 | - - - | 902 | - - - | 1020 | - - - |
| | | TJI-230 230 | 50 | 844 | - - - | 724 | - - - | 719 | - - - | 874 | - - - | 717 | - - - | 705 | - - - | 732 | - - - |
| | | COACHELA 230 | 50 | 702 | - - - | 818 | - - - | 831 | - - - | 768 | - - - | 1000 | - - - | 639 | - - - | 747 | - - - |
| | | ELCENTSW 230 | 50 | 577 | - - - | 993 | - - - | 1126 | - - - | 529 | - - - | 967 | - - - | 838 | - - - | 971 | - - - |
| | | HIGHLINE 230 | 50 | 448 | - - - | 905 | - - - | 984 | - - - | 417 | - - - | 849 | - - - | 729 | - - - | 821 | - - - |
| | | NEWSF230 230 | 50 | NA | NA | 842 | - - - | 996 | - - - | NA | NA | 795 | - - - | 738 | - - - | 861 | - - - |
| | | ESCNDIDO 230 | 75 | 792 | - - - | 856 | - - - | 1307 | - - - | 1127 | - - - | 815 | - - - | 801 | - - - | 1018 | - - - |
| | | IMPRLVLY 230 | 75 | 1307 | - - - | 1114 | - - - | 1314 | - - - | 1451 | - - - | 1092 | - - - | 995 | - - - | 1172 | - - - |
| | | MIGUEL 230 | 75 | 1007 | - - - | 916 | - - - | 952 | - - - | 1131 | - - - | 823 | - - - | 792 | - - - | 891 | - - - |
| | | MISSION 230 | 75 | 993 | - - - | 976 | - - - | 942 | - - - | 1147 | - - - | 824 | - - - | 799 | - - - | 868 | - - - |
| | | SANLUSRY 230 | 75 | 1343 | - - - | 1418 | - - - | 1464 | - - - | 1520 | - - - | 1039 | - - - | 1015 | - - - | 1156 | - - - |
| | | SOUTHBAY 69 | 75 | 320 | - - - | 340 | - - - | 300 | - - - | 345 | - - - | 297 | - - - | 296 | - - - | 297 | - - - |
| | | SYCAMORE 230 | 75 | 959 | - - - | 1005 | - - - | 945 | - - - | 1042 | - - - | 835 | - - - | 807 | - - - | 894 | - - - |
| | | DEVERS 230 | 150 | 1726 | - - - | 1733 | - - - | 1711 | - - - | 1439 | - - - | 967 | - - - | 951 | - - - | 1131 | - - - |
| | | LUGO 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2182 | - - - | 2187 | - - - | 2644 | - - - |
| | | MIRALOMW 230 | 150 | 2620 | - - - | 2535 | - - - | 2609 | - - - | 2536 | - - - | 1581 | - - - | 1617 | - - - | 1867 | - - - |
| | | S.ONOFRE 230 | 150 | 1723 | - - - | 1782 | - - - | 1806 | - - - | 1661 | - - - | 1198 | - - - | 1184 | - - - | 1271 | - - - |
| | | SERRANO 230 | 150 | 2621 | - - - | 2558 | - - - | 2644 | - - - | 2465 | - - - | 1560 | - - - | 1562 | - - - | 1772 | - - - |
| | | VALYSVC1 500 | 150 | 1990 | - - - | 1838 | - - - | 2055 | - - - | 1830 | - - - | 1147 | - - - | 1153 | - - - | 1443 | - - - |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 3000 | - - - | 3000 | - - - | 2823 | - - - | 2838 | - - - | 3000 | - - - |
| | | VSTA 230 | 150 | 2359 | - - - | 2275 | - - - | 2334 | - - - | 2104 | - - - | 1350 | - - - | 1346 | - - - | 1587 | - - - |
| | | PADUA 230 | 150 | 1161 | - - - | 1142 | - - - | 1153 | - - - | 1176 | - - - | 952 | - - - | 951 | - - - | 1026 | - - - |
| | | IRONMTP1 6.9 | | 25 | | 26 | | 26 | | 28 | | 26 | | 26 | | 27 | |

| Switch-Deck | OUTAGE DESCRIPTION | Q Bus Name | Margin Criteria, MVar | Q V MARGIN ANALYSIS RESULTS (Results shown as "- - -" when margin is greater than 200% of the margin critera) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hs_rev4_v2 | | hs_alt2d1_s1_v2 | | hs_alt3bd1_s1_v2 | | la_rev5_v2 | | la_alt2ad3_s1_v2 | | la_alt2d3_s1_v2 | | la_alt3bd3_s1_v2 | |
| | | | | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% | MVar | Crit.,% |
| song23a | San Onofre Units 2 & 3 | HRD-230 230 | 50 | 585 | - - - | 378 | - - - | 361 | - - - | 661 | - - - | 547 | - - - | 534 | - - - | 638 | - - - |
| | | MTP-230 230 | 50 | 558 | - - - | 366 | - - - | 336 | - - - | 699 | - - - | 552 | - - - | 536 | - - - | 659 | - - - |
| | | ROA-230 230 | 50 | 719 | - - - | 471 | - - - | 542 | - - - | 959 | - - - | 750 | - - - | 708 | - - - | 876 | - - - |
| | | TJI-230 230 | 50 | 561 | - - - | 369 | - - - | 335 | - - - | 706 | - - - | 557 | - - - | 541 | - - - | 666 | - - - |
| | | COACHELA 230 | 50 | 702 | - - - | 647 | - - - | 694 | - - - | 735 | - - - | 830 | - - - | 572 | - - - | 697 | - - - |
| | | ELCENTSW 230 | 50 | 541 | - - - | 568 | - - - | 662 | - - - | 507 | - - - | 763 | - - - | 669 | - - - | 835 | - - - |
| | | HIGHLINE 230 | 50 | 450 | - - - | 572 | - - - | 661 | - - - | 406 | - - - | 718 | - - - | 606 | - - - | 740 | - - - |
| | | NEWSF230 230 | 50 | NA | NA | 464 | - - - | 563 | - - - | NA | NA | 640 | - - - | 579 | - - - | 763 | - - - |
| | | ESCNDIDO 230 | 75 | 562 | - - - | 480 | - - - | 418 | - - - | 913 | - - - | 618 | - - - | 602 | - - - | 828 | - - - |
| | | IMPRLVLY 230 | 75 | 857 | - - - | 539 | - - - | 635 | - - - | 1183 | - - - | 826 | - - - | 762 | - - - | 977 | - - - |
| | | MIGUEL 230 | 75 | 523 | - - - | 366 | - - - | 320 | - - - | 827 | - - - | 574 | - - - | 552 | - - - | 734 | - - - |
| | | MISSION 230 | 75 | 502 | - - - | 382 | - - - | 313 | - - - | 836 | - - - | 567 | - - - | 551 | - - - | 719 | - - - |
| | | SANLUSRY 230 | 75 | 659 | - - - | 549 | - - - | 461 | - - - | 1089 | - - - | 696 | - - - | 680 | - - - | 904 | - - - |
| | | SOUTHBAY 69 | 75 | 249 | - - - | 243 | - - - | 198 | - - - | 297 | - - - | 285 | - - - | 284 | - - - | 301 | - - - |
| | | SYCAMORE 230 | 75 | 526 | - - - | 399 | - - - | 334 | - - - | 785 | - - - | 576 | - - - | 558 | - - - | 735 | - - - |
| | | DEVERS 230 | 150 | 1565 | - - - | 1346 | - - - | 1252 | - - - | 1304 | - - - | 807 | - - - | 790 | - - - | 1006 | - - - |
| | | LUGO 500 | 150 | 2889 | - - - | 2507 | - - - | 2085 | - - - | 3000 | - - - | 1676 | - - - | 1678 | - - - | 2157 | - - - |
| | | MIRALOMW 230 | 150 | 1788 | - - - | 1576 | - - - | 1398 | - - - | 2185 | - - - | 1211 | - - - | 1210 | - - - | 1541 | - - - |
| | | S.ONOFRE 230 | 150 | 805 | - - - | 673 | - - - | 582 | - - - | 1206 | - - - | 798 | - - - | 783 | - - - | 1031 | - - - |
| | | SERRANO 230 | 150 | 1546 | - - - | 1345 | - - - | 1175 | - - - | 2062 | - - - | 1176 | - - - | 1175 | - - - | 1470 | - - - |
| | | VALYSVC1 500 | 150 | 1594 | - - - | 1358 | - - - | 1083 | - - - | 1633 | - - - | 901 | - - - | 903 | - - - | 1179 | - - - |
| | | VINCENT 500 | 150 | 3000 | - - - | 3000 | - - - | 2812 | - - - | 3000 | - - - | 2232 | - - - | 2225 | - - - | 2799 | - - - |
| | | VSTA 230 | 150 | 1811 | - - - | 1603 | - - - | 1545 | - - - | 1865 | - - - | 1048 | - - - | 1040 | - - - | 1349 | - - - |
| | | PADUA 230 | 150 | 1035 | - - - | 1016 | - - - | 1029 | - - - | 1103 | - - - | 855 | - - - | 855 | - - - | 963 | - - - |
| | | IRONMTP1 6.9 | | 24 | | 25 | | 25 | | 28 | | 26 | | 25 | | 26 | |

2) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69, and two 79 MVar Caps at Devers 230
3) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69
4) Reactive margin & voltage ciolation solution for base case la_alt2ad3_s1_v2 resolved by addition of shunt capts at: S.Onofre 230: 500 Mvars, South Bay 69: 75 Mvar, Serrano: 395 MVar, Miguel 230: 450 MVar, Sycamore 230: 300 MVar, Coachella 230: 150 MVar (la_alt2ad3_s1_v2_dvmpih_Caps)
5) Reactive margin solution for base case la_alt2d3_s1_v2 resolved by addition of shunt caps at; S.Onofre 230: 500 MVar, Southbay 69: 75 MVar, Serrano 230: 395 MVar, Miguel 230: 450 MVar, and Sycamore 230: 300 MVar (la_alt2d3_s1_v2_dvmp12_Caps4V)
6) Reactive margin solution for base case la_alt3bd3_s1_v2 resolved by addition of five 75 MVar shunt cap at S.Onofre 230 (la_alt3bd3_s1_v2_dvmp12_Caps)
7) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69, and three 79 MVar Caps at Devers 230

## POST OUTAGE LOADING AS A % OF MVA2 (EMERGENCY RATING) EXCLUDING GENERATOR STEP-UP TRANSFORMERS

| Switch-deck | OUTAGE DESCRIPTION | OVERLOADED ELEMENT | | | | | | hs_rev4_v2 | hs_alt2d1_s1_v2 | hs_alt3bd1_s1_v2 | la_rev5_v2 | la_alt2ad3_s1_v2 | la_alt2d3_s1_v2 | la_alt3bd3_s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FROM BUS | TO BUS | ID | Area | RATING | UNIT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT |
| **SINGLE CONTINGENCIES:** | | | | | | | | | | | | | | |
| sfcn | San Filipe - Cental X 500kV | ARABY S 69.0 | NGILATAP 69.0 | #1 | 14 | 326.33 | Amps | NA | 201% | 203% | NA | -- -- -- | -- -- -- | -- -- -- |
| - or - | - or - | RUM-230 230 | ROA-230 230 | #1 | 20 | 973.97 | Amps | NA | -- -- -- | -- -- -- | NA | 107% | 107% | 104% |
| sfnr | San Filipe - North SD 500kV | HRD-230 230 | HRD-115 115 | #1 | 20 | 225 | MVA | NA | -- -- -- | -- -- -- | NA | 101% | 101% | 99% |
| | | ROA-230 230 | HRD-230 230 | #1 | 20 | 973.97 | Amps | NA | -- -- -- | -- -- -- | NA | 94% | 95% | 92% |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | NA | -- -- -- | -- -- -- | NA | -- -- -- | -- -- -- | 109% |
| | | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | NA | -- -- -- | -- -- -- | NA | -- -- -- | -- -- -- | 103% |
| basf | Banister - San Filipe 230 | No Overloaded Elements | | | | | | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | | | | | | | | | | | See Note 2 | See Note 7 | See Note 2 |
| deva | Devers - ValleySC 500kV | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 147% | 162% | 162% | 147% |
| | | SANBRDNO 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 114% | 128% | 127% | 114% |
| | | BANIS230 230 | NEWSF230 230 | #1 | 8 | 2209 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 98% |
| | | RUM-230 230 | ROA-230 230 | #1 | 20 | 973.97 | Amps | -- -- -- | -- -- -- | -- -- -- | 93% | 94% | 94% | 94% |
| | | HRD-230 230 | HRD-115 115 | #1 | 20 | 225 | MVA | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 91% | 91% | 91% |
| | | DEVERS 230 | VSTA 230 | #2 | 2 | 2849.1 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 92% | 92% | -- -- -- |
| | | DEVERS 230 | VSTA 230 | #1 | 2 | 2849.1 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 92% | 92% | -- -- -- |
| seva | Serrano - ValleySC 500 | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 122% | 136% | 162% | 126% |
| | - or - | SANBRDNO 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 90% | 104% | 128% | 94% |
| | SerVal - ValleySC 500 | | | | | | | | | | | | | |
| dv_east_slo | Devers - Palo Verde 500kV #1 | RTP1 92 | RTAP2 92 | #1 | 8 | 357.71 | Amps | 102% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | - or - | MIDPINTS 500 | IH500 500 | #1 | 8 | 2757.4 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 114.71% | -- -- -- | -- -- -- |
| | Devers - Midpints 500kV #1 | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 90.60% | -- -- -- | -- -- -- |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 92.92% | -- -- -- |
| ivng | Imperial Valley - N. Gila 500 #1 | ARABY S 69 | NGILATAP 69 | #1 | 14 | 326.33 | Amps | 168% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | KNOB 161 | PILOTKNB 161 | #1 | 8 | 591.69 | Amps | 128% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | B 69 | KETTNER 69 | #1 | 22 | 1631.6 | Amps | -- -- -- | 0.93 | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | DIXIELAN 92 | DIXPRI2 92 | #1 | 8 | 338.88 | Amps | -- -- -- | -- -- -- | -- -- -- | 131.57% | -- -- -- | -- -- -- | -- -- -- |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 100.88% | -- -- -- | -- -- -- | -- -- -- |
| | | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | 100.02% | -- -- -- | -- -- -- | 99.70% |
| | | USNAF 92 | ELTERMIN 92 | #1 | 8 | 828.37 | Amps | -- -- -- | -- -- -- | -- -- -- | 91.00% | -- -- -- | -- -- -- | -- -- -- |
| | | BANIS230 230 | NEWSF230 230 | #1 | 8 | 2209 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 92.25% | 90.38% | 95.71% |

## POST OUTAGE LOADING AS A % OF MVA2 (EMERGENCY RATING) EXCLUDING GENERATOR STEP-UP TRANSFORMERS

| Switch-deck | OUTAGE DESCRIPTION | OVERLOADED ELEMENT | | | | | | hs_rev4_v2 | hs_alt2d1_s1_v2 | hs_alt3bd1_s1_v2 | la_rev5_v2 | la_alt2ad3_s1_v2 | la_alt2d3_s1_v2 | la_alt3bd3_s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FROM BUS | TO BUS | ID | Area | RATING | UNIT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT |
| | | | | | | | | | | See Note 3 | | | | See Note 3 |
| ivml | Imperial Valley - Miguel 500 #1 | ARABY S 69 | NGILATAP 69 | #1 | 14 | 326.3 | Amps | 164% | 206% | 203% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | HRD-230 230 | HRD-115 115 | #1 | 20 | 225.0 | MVA | 119% | 102% | 112% | 145% | 115% | 115% | 121% |
| | | RUM-230 230 | ROA-230 230 | #1 | 20 | 974.0 | Amps | 117% | 95% | -- -- -- | 171% | 126% | 126% | -- -- -- |
| | | RTP1 92 | RTAP2 92 | #1 | 8 | 357.7 | Amps | 117% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | B 69 | KETTNER 69 | #1 | 22 | 1631.6 | Amps | 113% | 127% | 137% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| ivml_Caps | | CARLTHTP 138 | SYCAMORE 138 | #1 | 22 | 853.9 | Amps | 111% | 137% | 121% | -- -- -- | 94% | 94% | -- -- -- |
| | | OTAYMESA 230 | TJI-230 230 | #1 | 22 | 1999.9 | Amps | 107% | -- -- -- | 99% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | KETTNER 69 | OLD TOWN 69 | #1 | 22 | 1999.8 | Amps | 106% | 117% | 125% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ROA-230 230 | HRD-230 230 | #1 | 20 | 974.0 | Amps | 105% | -- -- -- | 95% | 158% | 113% | -- -- -- | 124% |
| Case | | RINCON 69 | WARNERS 69 | #1 | 22 | 270.3 | Amps | 103% | -- -- -- | 108% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| la_alt3bd3 | | RUM-230 230 | HRD-230 230 | #1 | 20 | 974.0 | Amps | 100% | -- -- -- | 90% | 153% | 108% | 108% | 119% |
| ivml_VCaps | | GARFIELD 69 | MURRAY 69 | #1 | 22 | 854.3 | Amps | 97% | -- -- -- | 99% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | BERNARDO 69 | FELCTATP 69 | #1 | 22 | 854.3 | Amps | 95% | -- -- -- | 108% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | BRAW92 92 | ROCKWOOD 92 | #1 | 8 | 828.4 | Amps | 90% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ELLIOTT 69 | SYCAMORE 69 | #1 | 22 | 570.7 | Amps | -- -- -- | 133% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | CENTRALX 230 | CENTRALX 500 | #1 | 22 | 1329.0 | MVA | -- -- -- | 123% | -- -- -- | -- -- -- | 130% | 130% | -- -- -- |
| | | EASTGATE 69 | ROSE CYN 69 | #1 | 22 | 420.9 | Amps | -- -- -- | 113% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | RUM-230 230 | ROA-230 230 | #1 | 20 | 974.0 | Amps | -- -- -- | 95% | 107% | -- -- -- | -- -- -- | -- -- -- | 136% |
| | | SYCAMORE 230 | CENTRALX 230 | #2 | 22 | 2289.3 | Amps | -- -- -- | 94% | -- -- -- | -- -- -- | 100% | 100% | -- -- -- |
| | | SYCAMORE 230 | CENTRALX 230 | #1 | 22 | 2289.3 | Amps | -- -- -- | 94% | -- -- -- | -- -- -- | 100% | 100% | -- -- -- |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | 106% | 114% | 114% | 109% |
| | | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | 102% | 105% | -- -- -- | 97% |
| | | TOY-230 230 | HRD-230 230 | #2 | 20 | 974.0 | Amps | -- -- -- | -- -- -- | -- -- -- | 102% | -- -- -- | -- -- -- | -- -- -- |
| | | OTAYMESA 230 | TJI-230 230 | #1 | 22 | 1999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | 101% | -- -- -- | -- -- -- | -- -- -- |
| | | MTP-230 230 | TOY-230 230 | #1 | 20 | 974.0 | Amps | -- -- -- | -- -- -- | -- -- -- | 100% | -- -- -- | -- -- -- | -- -- -- |
| | | MTP-230 230 | HRD-230 230 | #1 | 20 | 974.0 | Amps | -- -- -- | -- -- -- | -- -- -- | 119% | -- -- -- | -- -- -- | -- -- -- |
| | | NORTHSD 500 | NORTHSD 230 | #1 | 20 | 1329.0 | Amps | -- -- -- | -- -- -- | 124% | -- -- -- | -- -- -- | 125% | 124% |
| | | DIVISION 69 | NAVSTMTR 69 | #1 | 22 | 841.8 | Amps | -- -- -- | -- -- -- | 97% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | BERNDOTP 69 | Lkhodges 69 | #1 | 22 | 854.3 | Amps | -- -- -- | -- -- -- | 96% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ESCNDIDO 230 | NORTHSD 230 | #1A | 22 | 1338.0 | Amps | -- -- -- | -- -- -- | 94% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ESCNDIDO 230 | NORTHSD 230 | #2A | 22 | 1338.0 | Amps | -- -- -- | -- -- -- | 94% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | SYCAMORE 69 | SYCAMORE 230 | #1 | 22 | 285.0 | MVA | -- -- -- | -- -- -- | 92% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ESCNDIDO 69 | FELCTATP 69 | #1 | 22 | 854.3 | Amps | -- -- -- | -- -- -- | 90% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| lumo | Lugo - Mohave 500 | None | | | | | | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| lumi | Lugo - Mira Loma 500 | None | | | | | | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| mise | Mira Loma - Serrano 500 kV | None | | | | | | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |

## POST OUTAGE LOADING AS A % OF MVA2 (EMERGENCY RATING) EXCLUDING GENERATOR STEP-UP TRANSFORMERS

| Switch-deck | OUTAGE DESCRIPTION | OVERLOADED ELEMENT | | | | | | hs_rev4_v2 | hs_alt2d1_s1_v2 | hs_alt3bd1_s1_v2 | la_rev5_v2 | la_alt2ad3_s1_v2 | la_alt2d3_s1_v2 | la_alt3bd3_s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FROM BUS | TO BUS | ID | Area | RATING | UNIT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT |
| luvi | Lugo - Victorville 500 | KNOB 161 | PILOTKNB 161 | #1 | 8 | 591.69 | Amps | 102% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ELDORDO 500 | LUGO 500 | #1 | 24 | 1600.4 | Amps | 92% | 95% | 94% | 95% | 96% | 96% | 91% |
| | | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | 94% | 103% | 103% | -- -- -- |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 111% | 111% | -- -- -- |
| omtj | Otay Mesa - Tijuana 230 | RTP1 92 | RTAP2 92 | #1 | 8 | 357.71 | Amps | 91% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | LOM-115 115 | LOM-69 69 | #1 | 20 | 20 | MVA | -- -- -- | 105% | 105% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |

## POST OUTAGE LOADING AS A % OF MVA2 (EMERGENCY RATING) EXCLUDING GENERATOR STEP-UP TRANSFORMERS

| Switch-deck | OUTAGE DESCRIPTION | OVERLOADED ELEMENT | | | | | | hs_rev4_v2 | hs_alt2d1_s1_v2 | hs_alt3bd1_s1_v2 | la_rev5_v2 | la_alt2ad3_s1_v2 | la_alt2d3_s1_v2 | la_alt3bd3_s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FROM BUS | TO BUS | ID | Area | RATING | UNIT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT |
| **DOUBLE CONTINGENCIES:** | | | | | | | | | | | | | | |
| lu-vcvi | Lugo-Vincent & Lugo - Victorville | KNOB 161 | PILOTKNB 161 | #1 | 8 | 591.69 | Amps | 102% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ELDORDO 500 | LUGO 500 | #1 | 24 | 1600.4 | Amps | 94% | 96% | 95% | 93% | 94% | 94% | -- -- -- |
| | | DEVERS 230 | OAK_VLLY 230 | #1 | 24 | 1149.7 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 111% | 111% | -- -- -- |
| | | DEVERS 500 | VALLEYSC 500 | #1 | 24 | 2999.9 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 103% | 102% | -- -- -- |
| lumi23 | Lugo - Mira Loma 500 Ckts 2 & 3 | LUGO 500 | RANCHVST 500 | #1 | 24 | 3000 | Amps | 122% | 116% | 115% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | KNOB 161 | PILOTKNB 161 | #1 | 8 | 591.69 | Amps | 102% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | | | | | | | | | | | See Note 4 | See Note 5 | See Note 6 |
| dvpv12 | Devers - PV & Devers - Harquahal | RTP1 92 | RTAP2 92 | #1 | 8 | 358 | Amps | 136% | 99% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| - or - | - or - | KNOB 161 | PILOTKNB 161 | #1 | 8 | 592 | Amps | 114% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| dvmp12 | Devers - Midpints 500kV #1 & 2 | J.HINDS 230 | MIRAGE 230 | #1 | 24 | 600 | Amps | 113% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| - or - | - or - | KYRENE 500 | JOJOBA 500 | #1 | 14 | 2000 | Amps | 100% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| dv-mpih_caps | Devers-Midpints & Devers - IH 500 | VICTORVL 500 | LUGO 500 | #1 | 24 | 3000 | Amps | 99% | 96% | 92% | 103% | -- -- -- | 93% | -- -- -- |
| | | BRAW92 92 | ROCKWOOD 92 | #1 | 8 | 828 | Amps | 96% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | BLYTHESC 161 | EAGLEMTN 161 | #1 | 24 | 724 | Amps | 95% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | LUGO 500 | RANCHVST 500 | #1 | 24 | 3000 | Amps | 91% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ARABY S 69 | NGILATAP 69 | #1 | 14 | 326.33 | Amps | -- -- -- | 177% | 174% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | JEFERSN 92 | AVE58 92 | #1 | 8 | 828 | Amps | -- -- -- | 105% | 103% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | KYRENE 500 | JOJOBA 500 | #1 | 14 | 2000 | Amps | -- -- -- | 101% | 100% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ELDORDO 500 | LUGO 500 | #1 | 24 | 1600.4 | Amps | -- -- -- | -- -- -- | -- -- -- | 105% | -- -- -- | 101% | 96% |
| | | RTP1 92 | RTAP2 92 | #1 | 8 | 357.71 | Amps | -- -- -- | -- -- -- | -- -- -- | 102% | -- -- -- | -- -- -- | -- -- -- |
| | | RUM-230 230 | ROA-230 230 | #1 | 20 | 973.97 | Amps | -- -- -- | -- -- -- | -- -- -- | 102% | 93% | 93% | 97% |
| | | MIRAGE 230 | RAMON 230 | #1 | 21 | 976.48 | Amps | -- -- -- | -- -- -- | -- -- -- | 101% | 133% | -- -- -- | -- -- -- |
| | | HASSYAMP 500 | N.GILA 500 | #1 | 22 | 2969.9 | Amps | -- -- -- | -- -- -- | -- -- -- | 100% | -- -- -- | -- -- -- | 97% |
| | | HRD-230 230 | HRD-115 115 | #1 | 20 | 225 | MVA | -- -- -- | -- -- -- | -- -- -- | 96% | 90% | -- -- -- | 93% |
| | | MOENKOPI 500 | ELDORDO 500 | #1 | 14 | 2750 | Amps | -- -- -- | -- -- -- | -- -- -- | 93% | -- -- -- | 91% | -- -- -- |
| | | RAMON 230 | COACHELA 230 | #1 | 8 | 976.48 | Amps | -- -- -- | -- -- -- | -- -- -- | 91% | 124% | -- -- -- | -- -- -- |
| | | DEVERS 230 | COACHELA 230 | #2 | 8 | 2209.0 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 127% | -- -- -- | -- -- -- |
| | | IH230 230 | IH500 500 | #1 | 22 | 1194.0 | MVA | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 123% | -- -- -- | -- -- -- |
| | | DEVERS 230 | MIRAGE 230 | #1 | 24 | 1674.3 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 116% | -- -- -- | -- -- -- |
| | | CENTRALX 230 | CENTRALX 500 | #1 | 22 | 1329.0 | MVA | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 90% | -- -- -- | -- -- -- |
| | | MIDWAY 92 | LEATHERS 92 | #1 | 8 | 828.37 | Amps | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- | 93% |

## POST OUTAGE LOADING AS A % OF MVA2 (EMERGENCY RATING) EXCLUDING GENERATOR STEP-UP TRANSFORMERS

| Switch-deck | OUTAGE DESCRIPTION | OVERLOADED ELEMENT | | | | | | hs_rev4_v2 | hs_alt2d1_s1_v2 | hs_alt3bd1_s1_v2 | la_rev5_v2 | la_alt2ad3_s1_v2 | la_alt2d3_s1_v2 | la_alt3bd3_s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FROM BUS | TO BUS | ID | Area | RATING | UNIT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT | PERCENT |
| pvgen23a | Palo Verde Units 2 & 3 | ARABY S 69 | NGILATAP 69 | #1 | 14 | 326 | Amps | 161% | 210% | 208% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | PINPK 230 | PNPKAPS 230 | #1 | 14 | 1707 | Amps | 124% | 123% | 123% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | KESWICK 230 | SPRINGCR 230 | #2 | 30 | 500 | Amps | 98% | 96% | 96% | 96% | 96% | 96% | 96% |
| | | BELTLINE 115 | TEXASSPR 115 | #1 | 30 | 265 | Amps | 95% | 93% | 93% | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | GLENCANY 230 | GLENCANY 345 | #1 | 14 | 350 | MVA | -- -- -- | -- -- -- | -- -- -- | 97% | 96% | 96% | 97% |
| | | GLENCANY 230 | GLENCANY 345 | #2 | 14 | 350 | MVA | -- -- -- | -- -- -- | -- -- -- | 97% | 96% | 96% | 97% |
| sota12 | Songs - Talega 230kV Ckts 1 & 2 | OCNSDETP 69 | STUARTTP 69 | #1 | 22 | 270 | Amps | 120% | 126% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | LASPULGS 69 | STUARTTP 69 | #1 | 22 | 270 | Amps | 114% | 120% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | HORNO TP 69 | LASPULGS 69 | #1 | 22 | 270 | Amps | 104% | 110% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | HORNO TP 69 | JAP MESA 69 | #1 | 22 | 270 | Amps | 104% | 110% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| | | ESCNDIDO 230 | TALEGA 230 | #1 | 22 | 1145 | Amps | 103% | 103% | -- -- -- | -- -- -- | -- -- -- | -- -- -- | -- -- -- |
| song23a | San Onofre Units 2 & 3 | KNOB 161 | PILOTKNB 161 | #1 | 8 | 592 | Amps | 106% | | | | | | |
| | | KESWICK 230 | SPRINGCR 230 | #2 | 30 | 500 | Amps | 98% | 96% | 96% | | | | |
| | | BELTLINE 115 | TEXASSPR 115 | #1 | 30 | 265 | Amps | 94% | | | | | | |
| | | ARABY S 69 | NGILATAP 69 | #1 | 14 | 326 | Amps | | 188% | 187% | | | | |
| | | NORTHSD 500 | NORTHSD 230 | #1 | 20 | 1329 | Amps | | | 109% | | | | |
| | | CARLTHTP 138 | SYCAMORE 138 | #1 | 22 | 853.89 | Amps | | | 106% | | | | |
| | | RUM-230 230 | ROA-230 230 | #1 | 20 | 973.97 | Amps | | | | 91% | 91% | 91% | 91% |

2) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69, and two 79 MVar Caps at Devers 230
3) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69
4) Reactive margin & voltage ciolation solution for base case la_alt2ad3_s1_v2 resolved by addition of shunt capts at: S.Onofre 230: 500 Mvars, South Bay 69: 75 Mvar, Serrano: 395 MVar, Miguel 230: 450 MVar, Sycamore 230: 300 MVar, Coachella 230: 150 MVar (la_alt2ad3_s1_v2_dvmpih_Caps)
5) Reactive margin solution for base case la_alt2d3_s1_v2 resolved by addition of shunt caps at; S.Onofre 230: 500 MVar, Southbay 69: 75 MVar, Serrano 230: 395 MVar, Miguel 230: 450 MVar, and Sycamore 230: 300 MVar (la_alt2d3_s1_v2_dvmp12_Caps4V)
6) Reactive margin solution for base case la_alt3bd3_s1_v2 resolved by addition of five 75 MVar shunt cap at S.Onofre 230 (la_alt3bd3_s1_v2_dvmp12_Caps)
7) Reactive margin solution resolved by addition of two 75 MVar shunt caps at SouthBay 69, and three 79 MVar Caps at Devers 230

## POST OUTAGE VOLTAGE DEVIATION BASED ON % CHANGE

| Switchdeck Name | OUTAGE DESCRIPTION | | | hs_rev4 _v2 | hs_alt2d1 _s1_v2 | hs_alt3bd1 _s1_v2 | la_rev5 _v2 | la_alt2ad3 _s1_v2 | la_alt2d3 _s1_v2 | la_alt3bd3 _s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|
| **SINGLE CONTINGENCIES:** | | Bus | Area | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) |
| NSF_West | San Filipe - Cental X 500kV<br>- or -<br>San Filipe - North SD 500kV | All buses <5% change | | NA | -- | -- | NA | -- | -- | -- |
| basf | Banister - San Filipe 230 | All buses <5% change | | NA | -- | -- | NA | -- | -- | -- |
| | | | | | | | | deva caps2 | deva caps2 | deva caps |
| deva<br>or deva_caps<br>or deva_caps2 | Devers - ValleySC 500kV | OAK_VLLY 115<br>OAK_VLLY 230<br>WHITEWTR 33<br>CABAZON 33 | | -- | -- | -- | 5.6<br>5.5<br>5.6<br>5.1 | 7.2<br>7.2<br>See Note 18 | 7.5<br>7.5<br>See Note 18 | -- |
| seva1<br>- or -<br>seva2 | Serrano - ValleySC 500<br>- or -<br>SerVal - ValleySC 500 | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |
| dv_east_dlo | Devers - Palo Verde 500kV #1<br>- or -<br>Devers - Midpints 500kV #1 | N.LAQUIN 92<br>N.VIEW 92<br>LAQUINTA 92<br>EDOM 92<br>MIRAGTIE 92 | | -- | -- | -- | -- | -- | 5.0<br>5.0<br>5.0<br>5.0<br>5.1 | -- |
| ivng | Imperial Valley - N. Gila 500 #1 | CENTRALX 230<br>CENTRALX 500<br>WHITEWTR 33 | | -- | -- | -- | -- | -- | -- | -- |
| ivml | Imperial Valley - Miguel 500 #1 | CENTRALX 230<br>CENTRALX 500 | | 125 Buses w/ > 5% change See Note 12 | 155 Buses w/ > 5% change See Note 13 | 15 Buses w/ > 5% change See Note 14 | 33 Buses w/ > 5% change See Note 15 | 5.3<br>5.3 | 5.5<br>5.5 | -- |
| lumo | Lugo - Mohave 500 | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |
| lumi | Lugo - Mira Loma 500 | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |
| mise | Mira Loma - Serrano 500 kV | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |

## POST OUTAGE VOLTAGE DEVIATION BASED ON % CHANGE

| Switchdeck Name | OUTAGE DESCRIPTION | | | hs_rev4 _v2 | hs_alt2d1 _s1_v2 | hs_alt3bd1 _s1_v2 | la_rev5 _v2 | la_alt2ad3 _s1_v2 | la_alt2d3 _s1_v2 | la_alt3bd3 _s1_v2 |
|---|---|---|---|---|---|---|---|---|---|---|
| **SINGLE CONTINGENCIES:** | | Bus | Area | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) | Change (%) |
| luvi | Lugo - Victorville 500 | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |
| omtj | Otay Mesa - Tijuana 230 | All buses <5% change | | -- | -- | -- | -- | -- | -- | -- |
| **DOUBLE CONTINGENCIES:** | | | | | | | | | | |
| lu-vcvi | Lugo-Vincent & Lugo - Victorville | All buses <10% change | | -- | -- | -- | -- | -- | -- | -- |
| lumi23 | Lugo - Mira Loma 500 Ckts 2 & 3 | | | -- | -- | -- | -- | -- | -- | -- |
| dv_east_dlo | Devers - PV & Devers - Harquahala<br>- or -<br>Devers - Midpints 500kV #1 & 2<br>- or -<br>Devers-Midpints & Devers - IH 500kV | NEEDLES 69 | | -- | -- | -- | 10.2 | dvmpih_Caps<br>--<br>See Note 16 | dvmp12_Caps4V<br>--<br>See Note 17 | dvmp12_Caps<br>--<br>See Note 16 |
| pvgen23a | Palo Verde Units 2 & 3 | All buses <10% change | | -- | -- | -- | -- | -- | -- | -- |
| sota12 | Songs - Talega 230kV Ckts 1 & 2 | All buses <10% change | | -- | -- | -- | -- | -- | -- | -- |
| song23a | San Onofre Units 2 & 3 | All buses <10% change | | -- | -- | -- | -- | -- | -- | -- |

12) Voltage violations eliminated by the addition of two 75 MVar Shunt Caps at Miguel 230
13) Voltage violations eliminated by the addition of three 75 MVar Shunt Caps at Miguel 230 and two 75 MVar Shunt Caps at Sycamore
14) Voltage violations reduced by the addition of three 75 MVar Shunt Caps at Miguel 230 and two 75 MVar Shunt Caps at SouthBay 69
15) Voltage violations eliminated by the addition of three 75 MVar Shunt Caps at Miguel 230 and 200 MVar of Shunt Caps at HRD-230
16) Divergence problem and voltage violations eliminated resolved by addition of shunt caps at; S.Onofre 230: 500 MVar, Southbay 69: 75 MVar, Serrano 230: 395 MVar, Miguel 230: 450 MVar, Sycamore 230: 300 MVar, and COACHELA 230: 150 MVar
17) Divergence problem and voltage violations eliminated resolved by addition of shunt caps at; S.Onofre 230: 500 MVar, Southbay 69: 75 MVar, Serrano 230: 395 MVar, Miguel 230: 450 MVar, Sycamore 230: 300 MVar, and COACHELA 230: 150 MVar
18) With reactive margin additions of two 75 MVar shunt caps at SouthBay 69, and three 79 MVar Caps at Devers 230

# Imperial Valley Study Group

## Appendix D.2

Production Cost Simulations

# Imperial Valley Study Group

## Appendix D.2.1

SSG-WI Generation Assumptions

| Fuel Type | Technology | Size/MW | Vintage | Min. Heat Rate (Btu/kWh) | Variable O&M Cost ($/MWh) | Forced Outage Rate | Forced Outage Duration (hrs) |
|---|---|---|---|---|---|---|---|
| Gas/Oil | Steam | <100 | <1960 | 12,194 | 5.001 | 0.071 | 55 |
| | | >100 | | 9,125 | | | |
| | | <100 | >1960 | 9,214 | | | |
| | | >100 | | 6,856 | 3.001 | | |
| Gas | SCCT | - | <1985 | 11,403 | 8.001 | 0.036 | 89 |
| | CCCT | - | | 9,600 | 5.001 | 0.055 | 22 |
| | SCCT | <70 | >1985 | 14,114 | | 0.036 | 89 |
| | SCCT | >70 | | 12,106 | | | |
| | CCCT | - | >1985 | 8,815 | 2.000 | 0.055 | 22 |
| Gas/Oil | CCCT-Frame F | - | >2001 | 3,620 | 2.000 | | |
| Gas | DT | - | <1985 | 9,600 | 5.001 | | |
| | | | >1985 | 10,695 | | | |
| Oil | IC | - | - | 9,125 | 13.250 | 0.036 | 55 |
| | SCCT | - | - | 11,403 | 8.001 | | |
| Coal | Steam | <100 | <1960 | 12,000 | 4.000 | 0.066 | 38 |
| | | >100 | | 11,500 | 2.000 | | |
| | | <100 | >1960 | 11,000 | 3.001 | | |
| | | >100 | | 10,500 | 2.000 | | |
| Bio/WH/Wood | Steam | - | - | 12,194 | 5.001 | 0.071 | |
| Geothermal | GE | - | - | - | 4.000 | 0.071 | 16 |
| Uranium | Nuclear | - | - | - | - | 0.070 | 298 |

Table D.2.1 SSG-WI Generation Assumptions

# Imperial Valley Study Group

## Appendix D.2.2

Geothermal Hourly Output with
No New Transmission

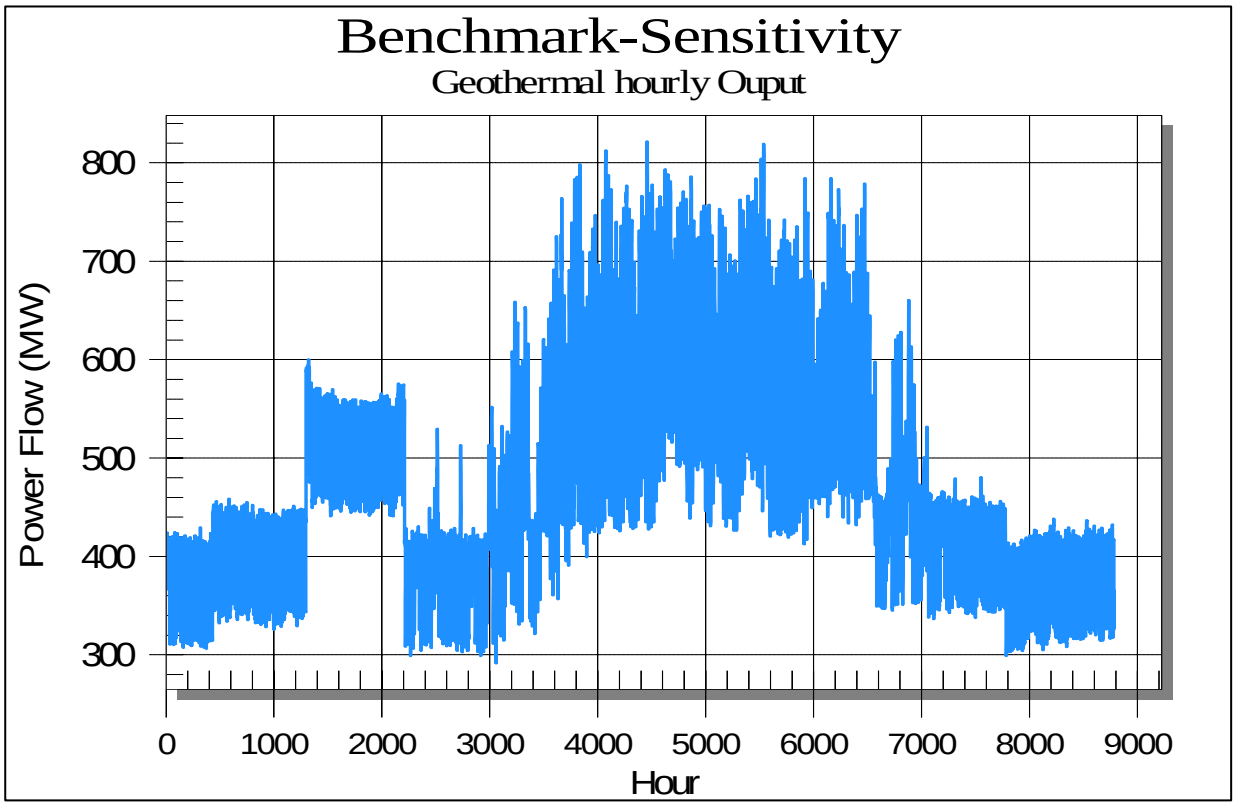


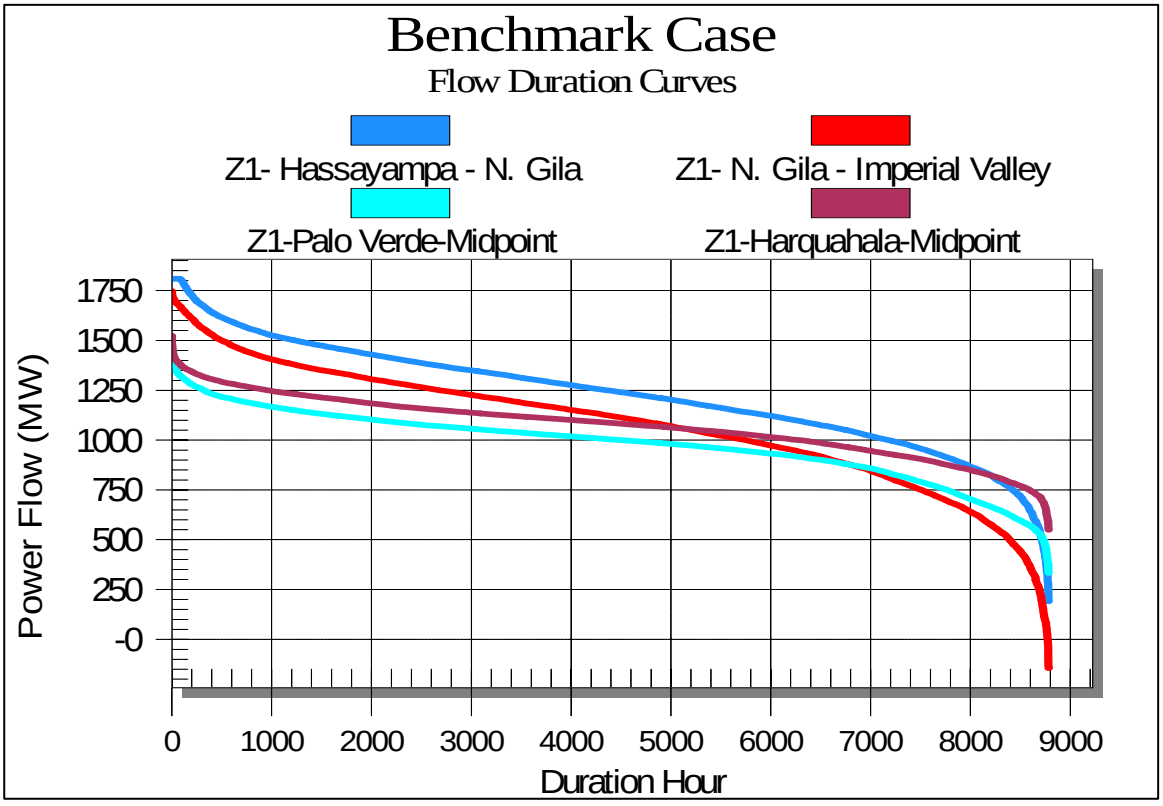

Figure D.2.2: Geothermal Hourly Output from Benchmark-Sensitivity Case

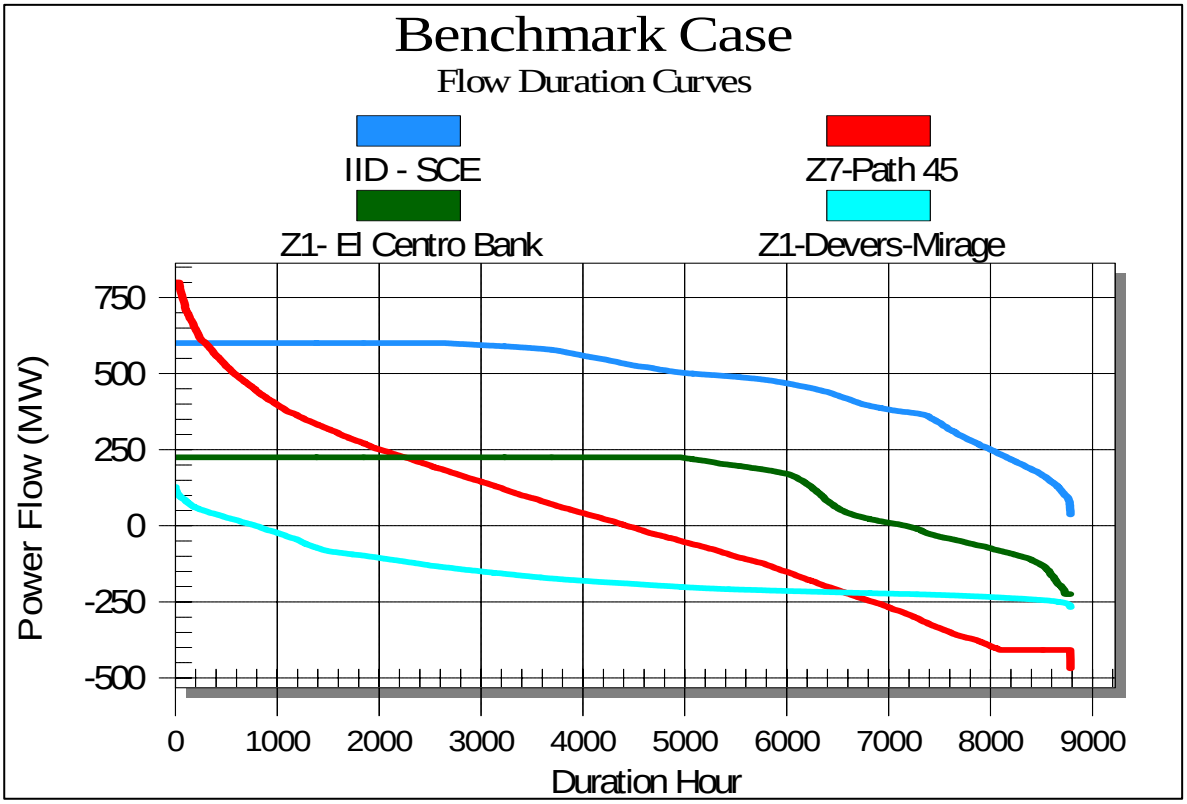
# Imperial Valley Study Group

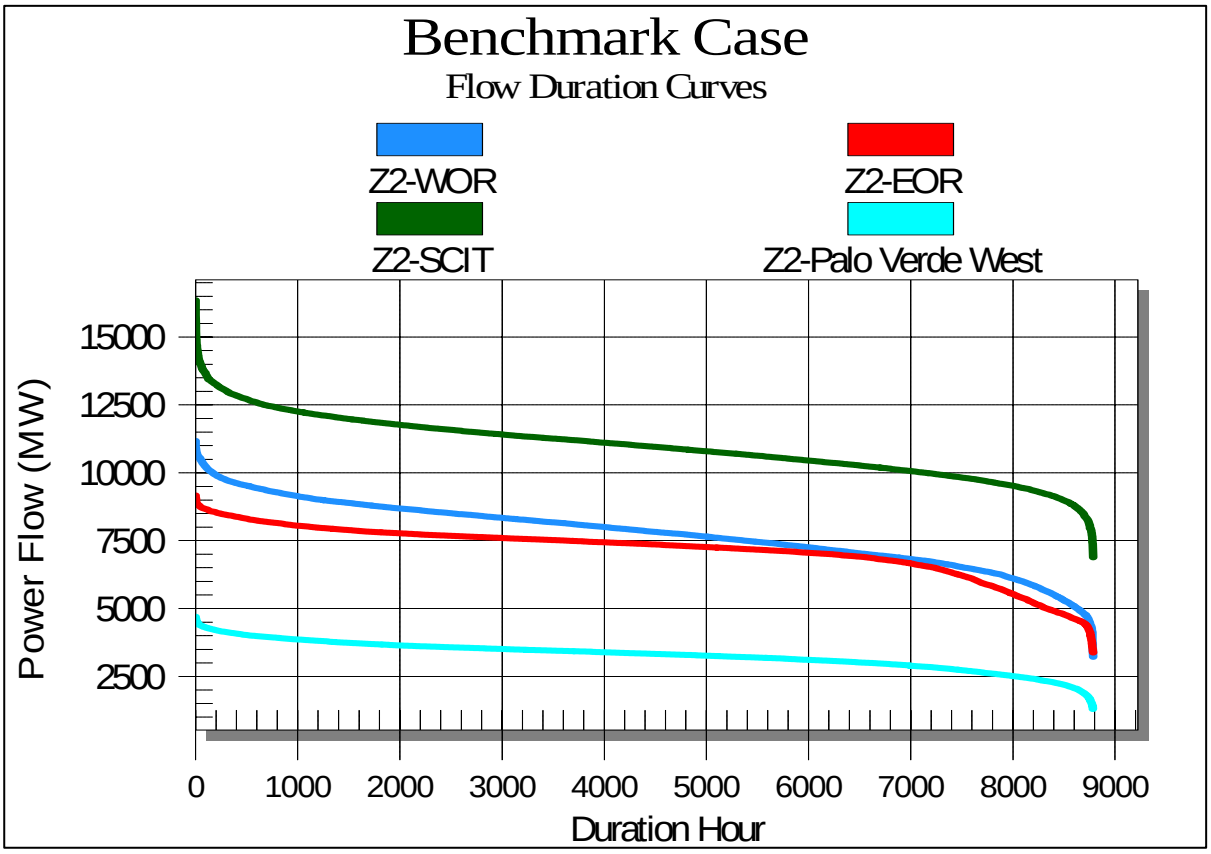
## Appendix D.2.3

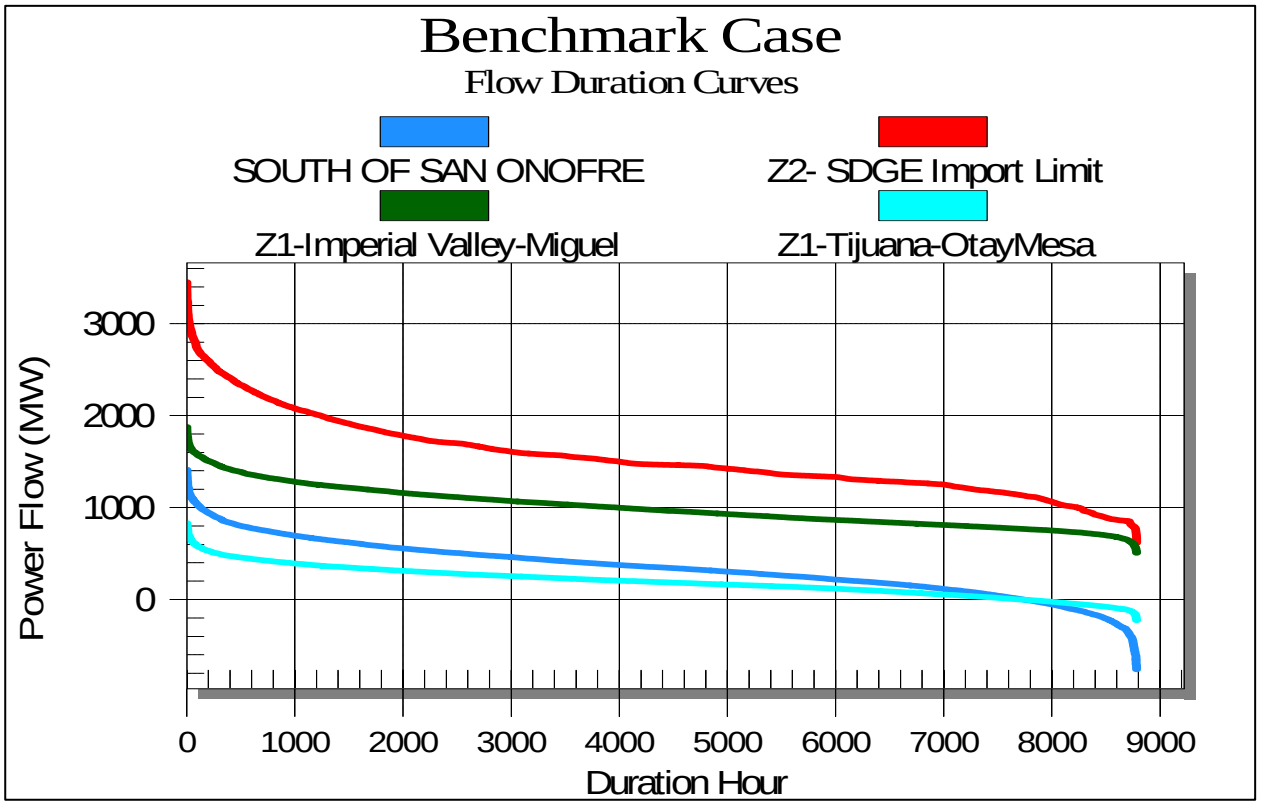
Flow Duration Curves on
Major Lines

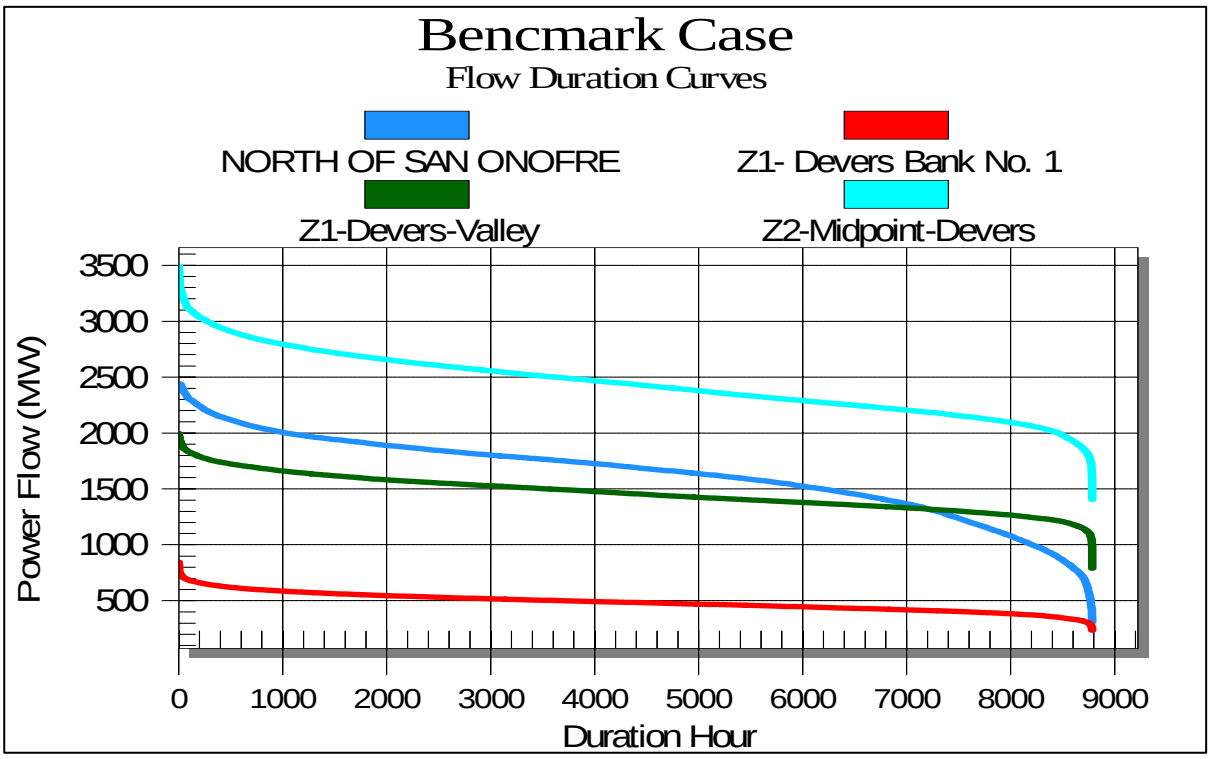
D.2.3.1 Benchmark Case: Flow Duration Curves



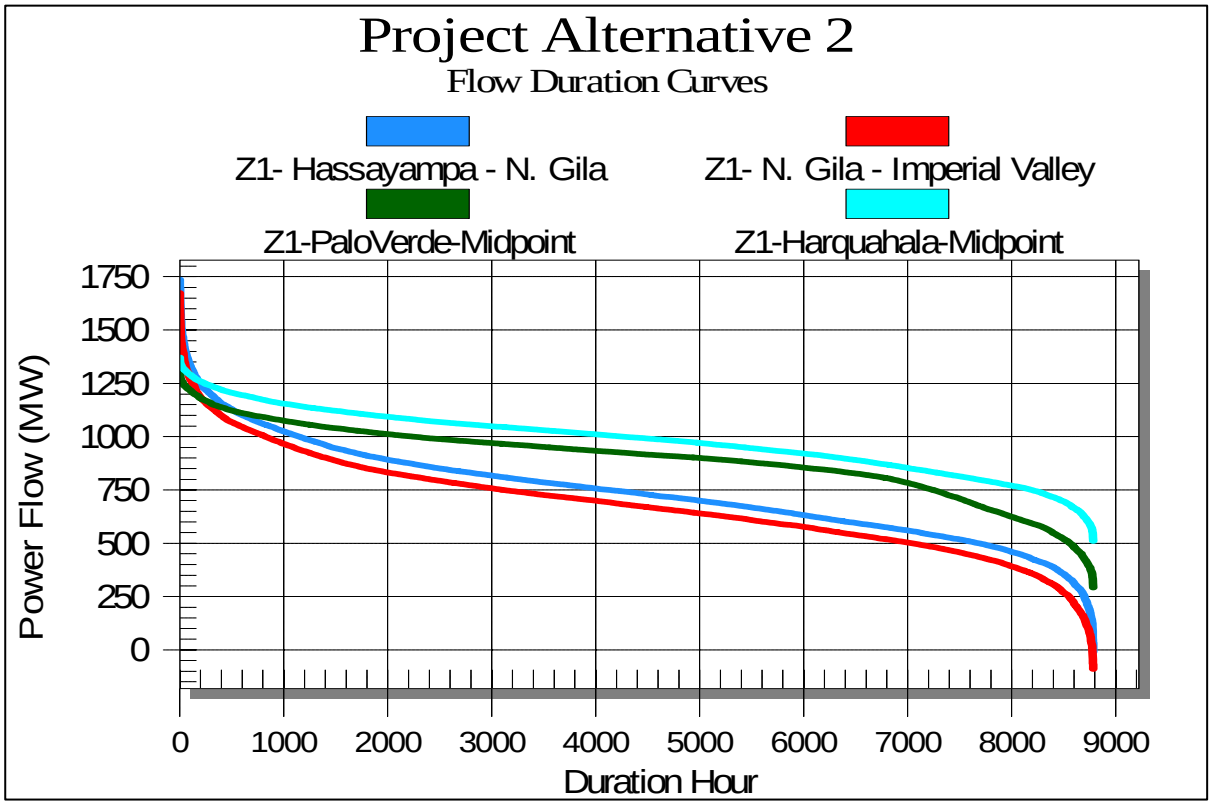



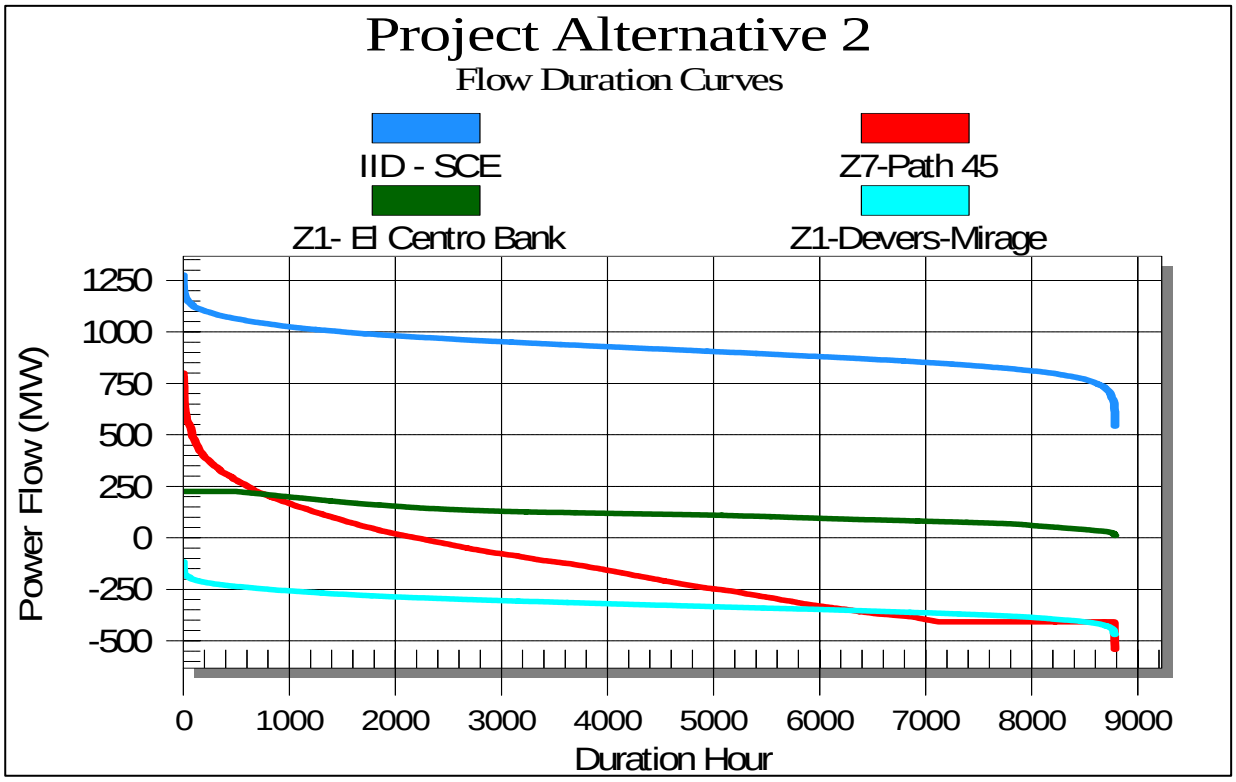

Benchmark Case
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

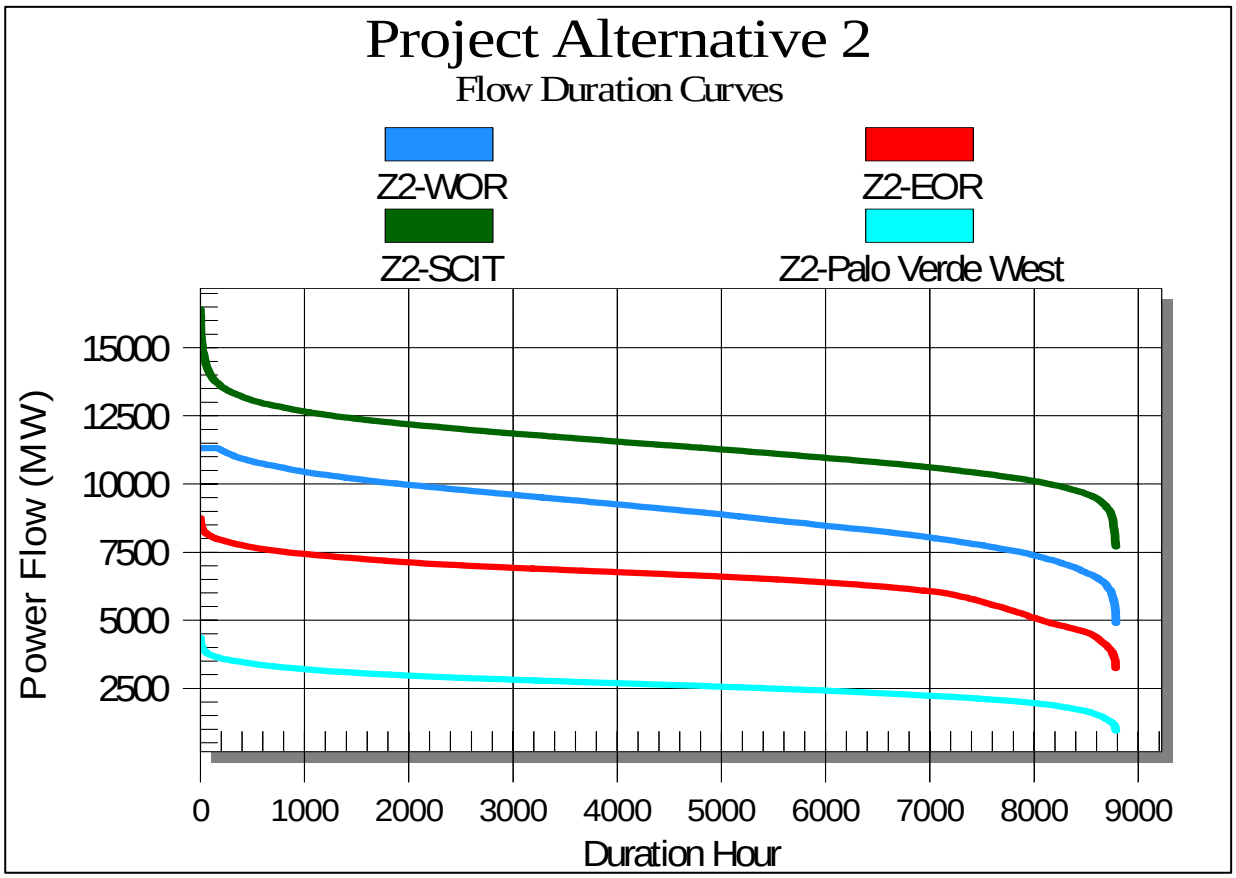

Benchmark Case
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Power Flow (MW)
3000
2000
1000
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

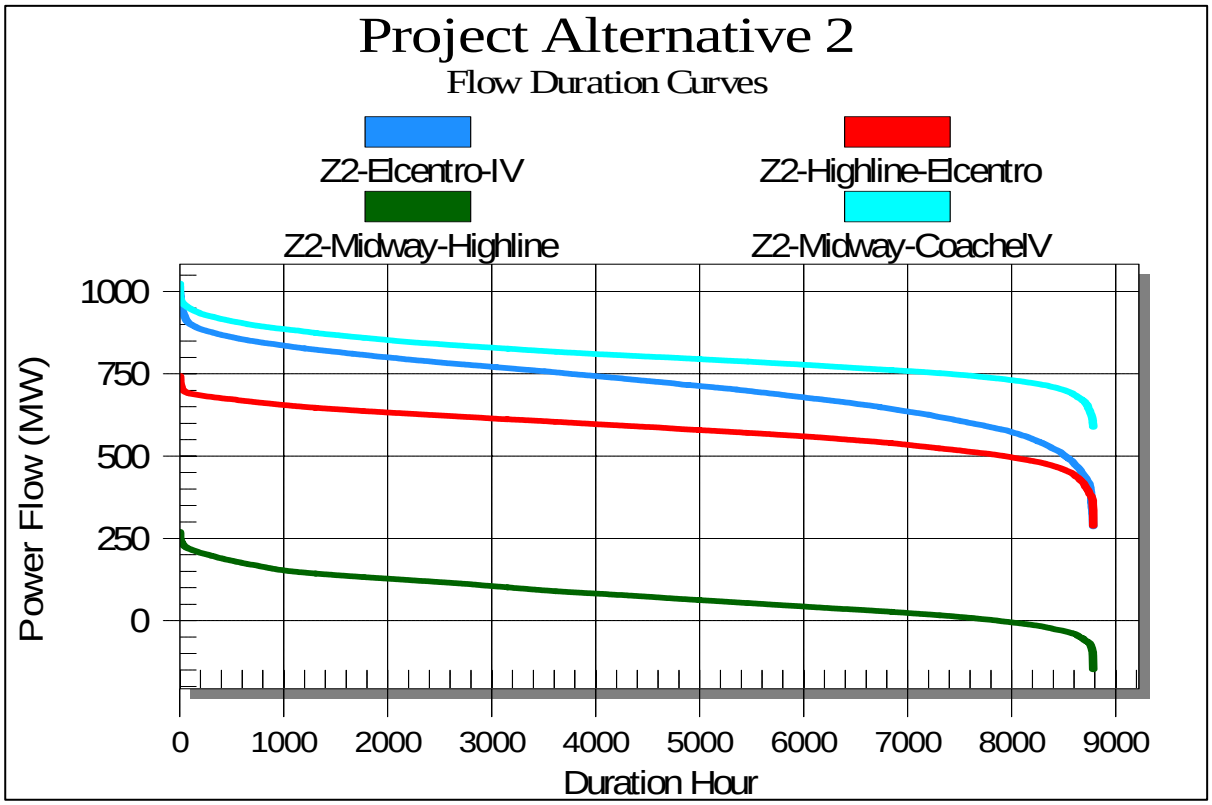


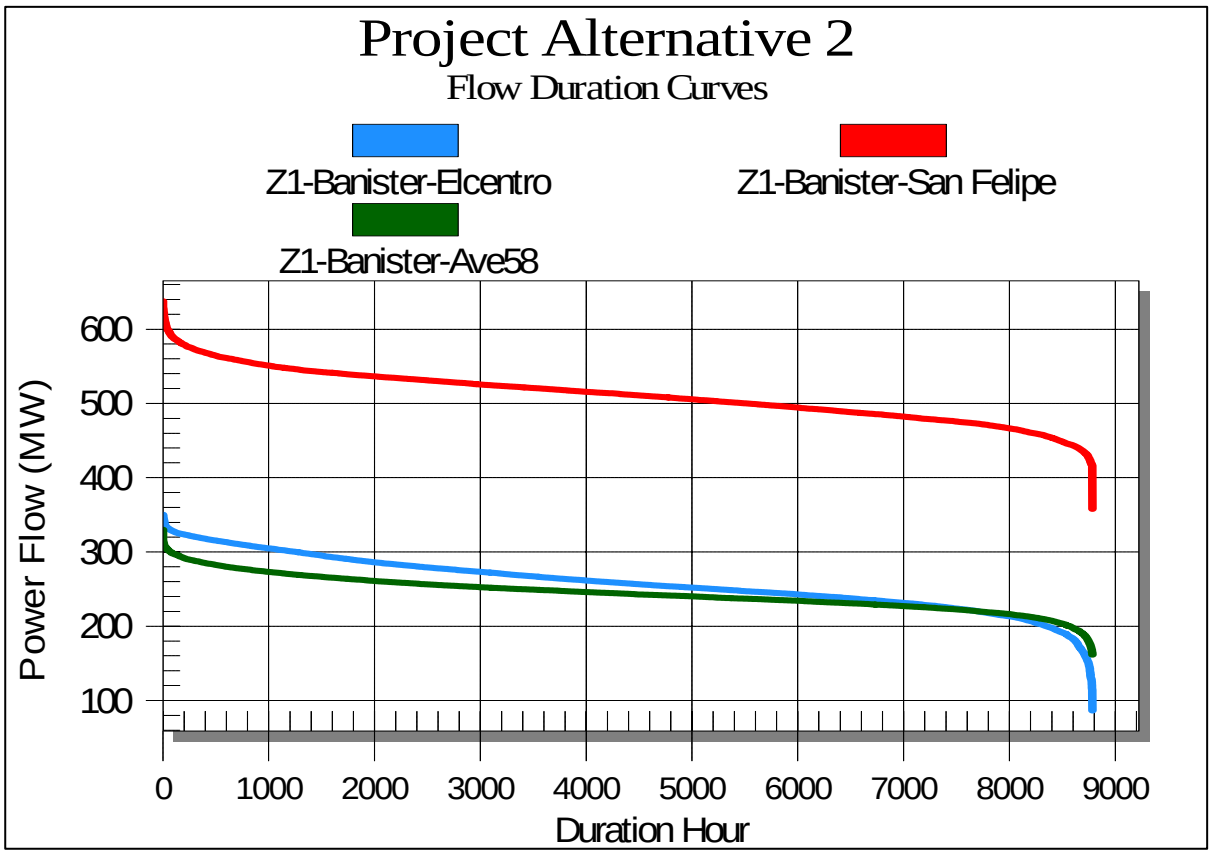

D.2.3.2 Project Alt. 2: Flow Duration Curves

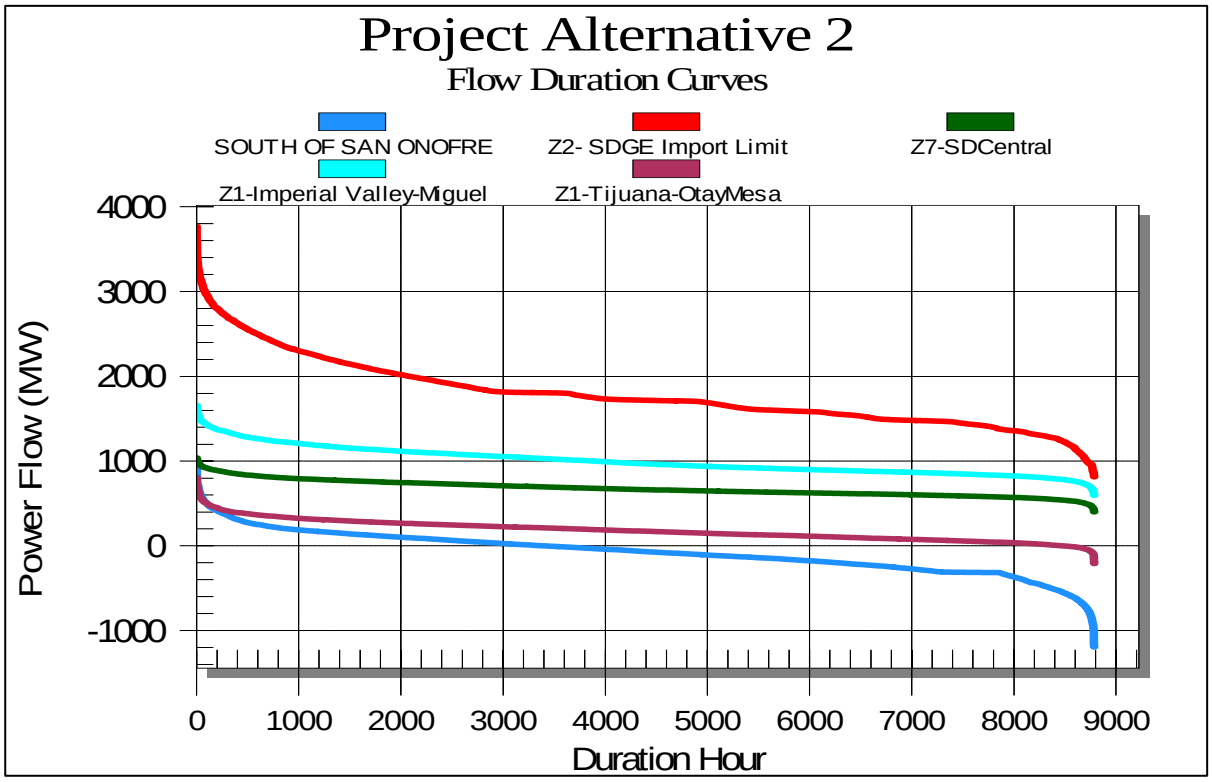


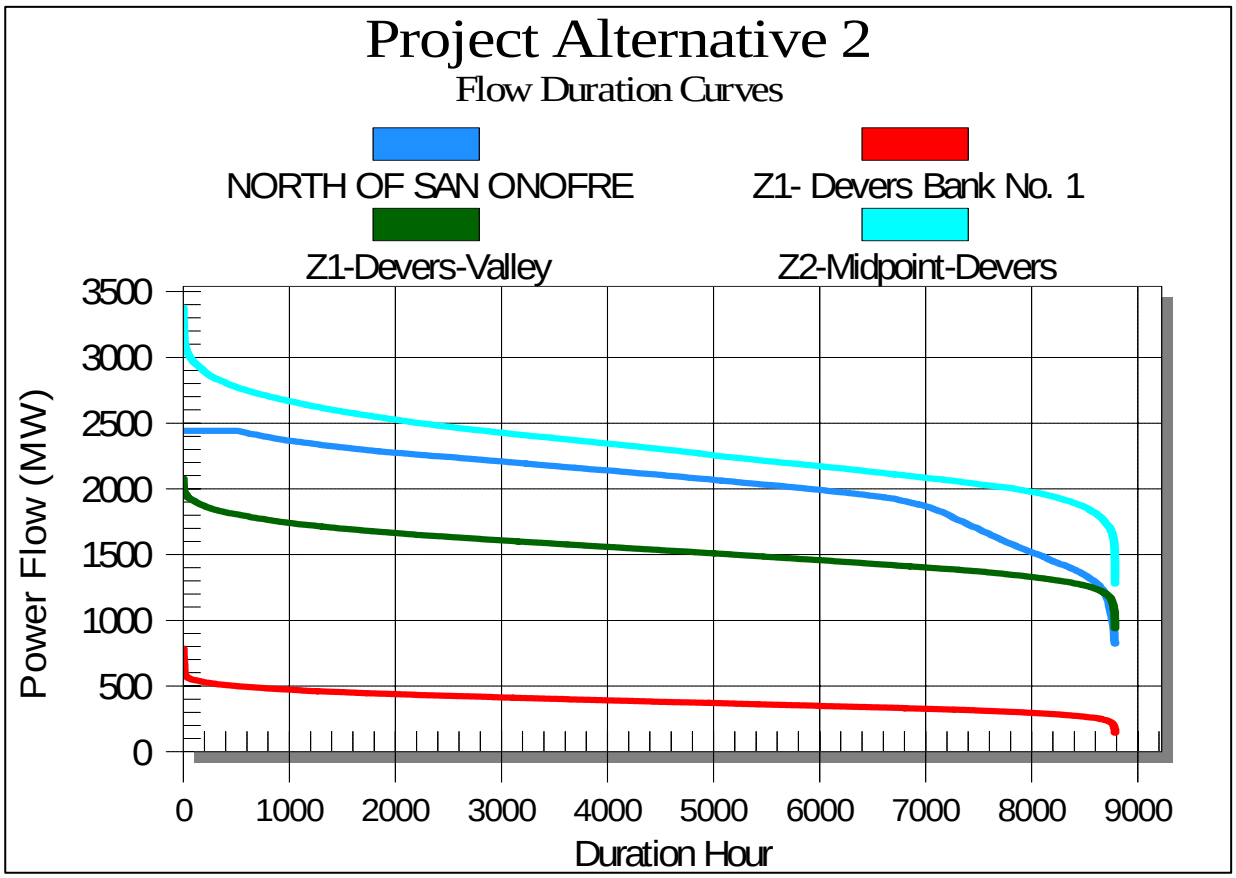

Project Alternative 2
Flow Duration Curves
IID - SCE
Z7-Path 45
Z1- El Centro Bank
Z1-Devers-Mirage
Power Flow (MW)
1250
1000
750
500
250
0
-250
-500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

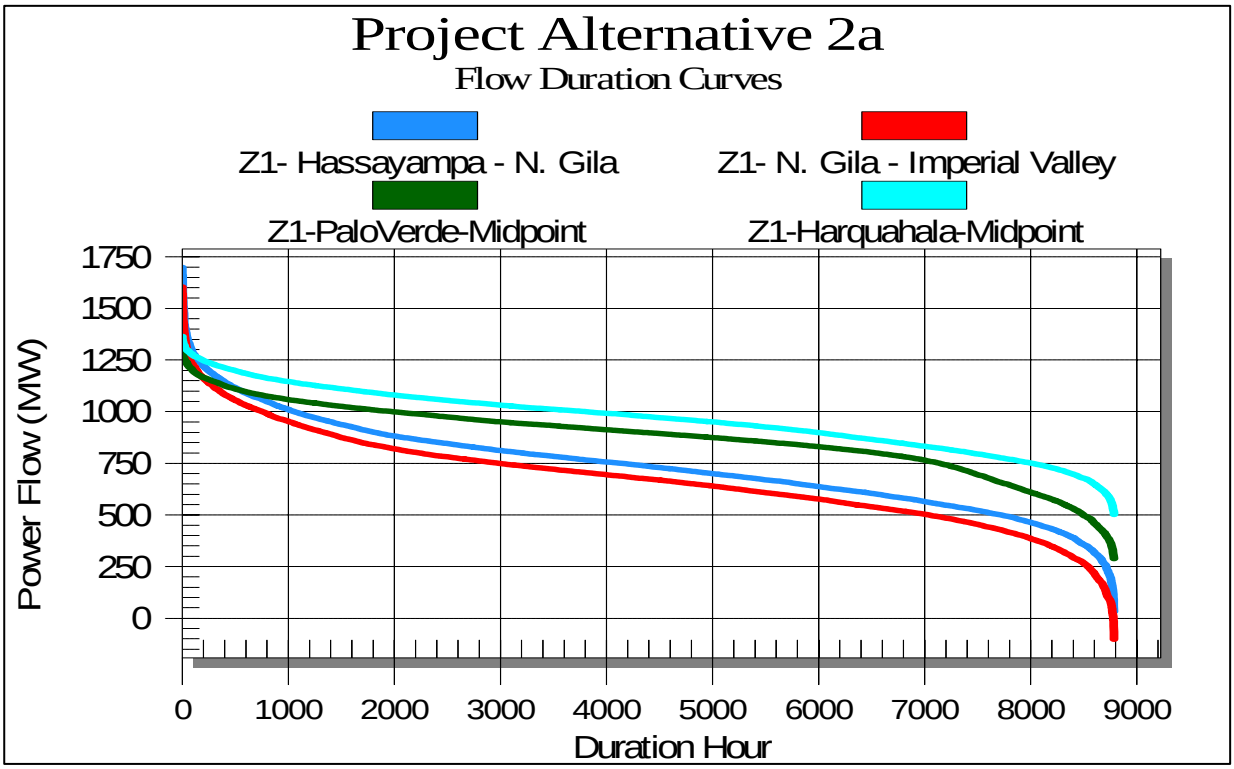

Project Alternative 2
Flow Duration Curves
Z2-Elcentro-IV
Z2-Highline-Elcentro
Z2-Midway-Highline
Z2-Midway-CoachelV
Power Flow (MW)
1000
750
500
250
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

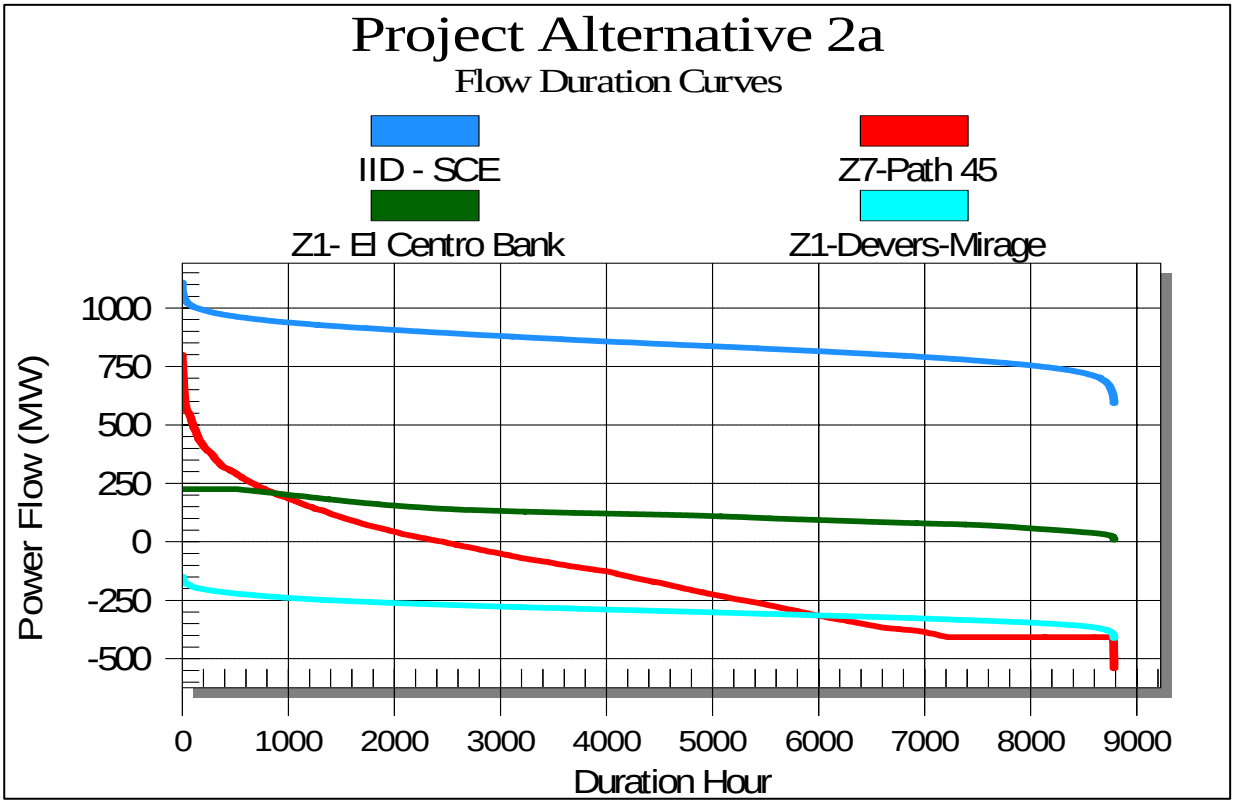

Project Alternative 2
Flow Duration Curves
Z1-Banister-Elcentro
Z1-Banister-San Felipe
Z1-Banister-Ave58
Power Flow (MW)
600
500
400
300
200
100
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

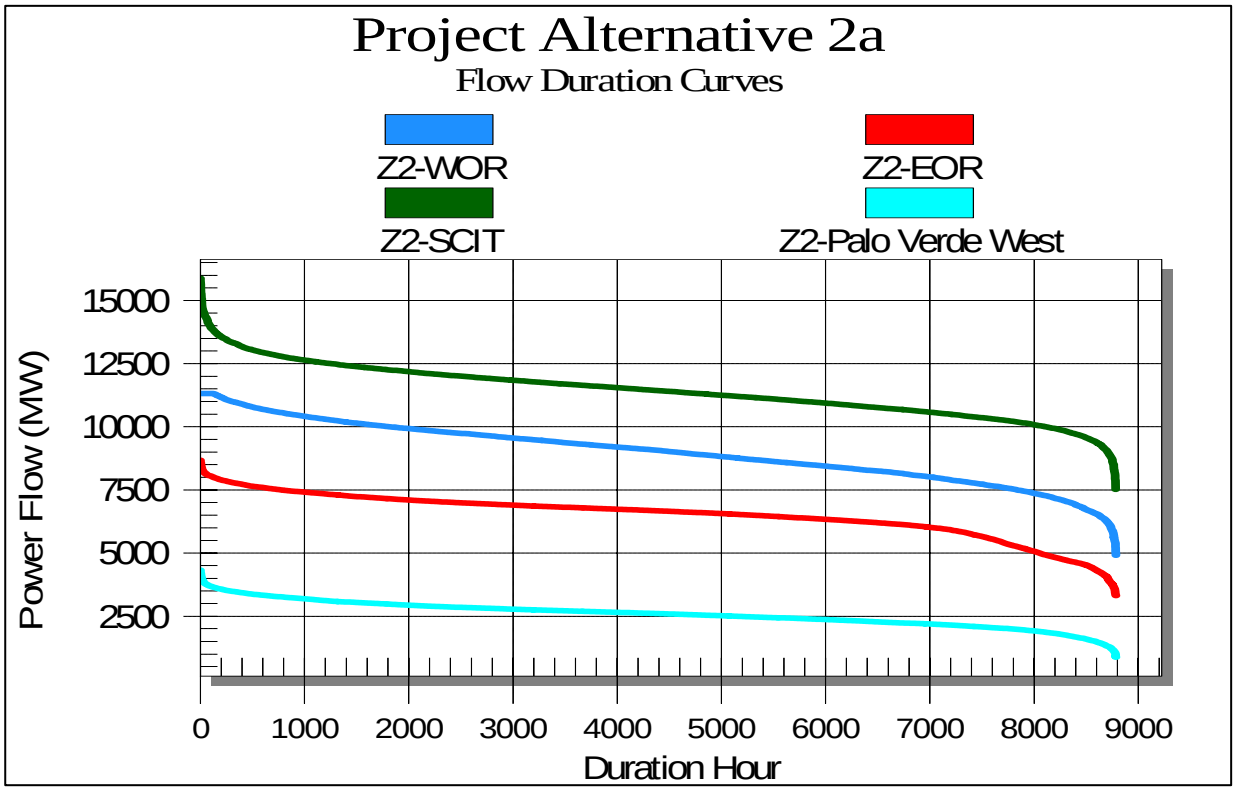

Project Alternative 2
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z7-SDCentral
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Power Flow (MW)
4000
3000
2000
1000
0
-1000
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

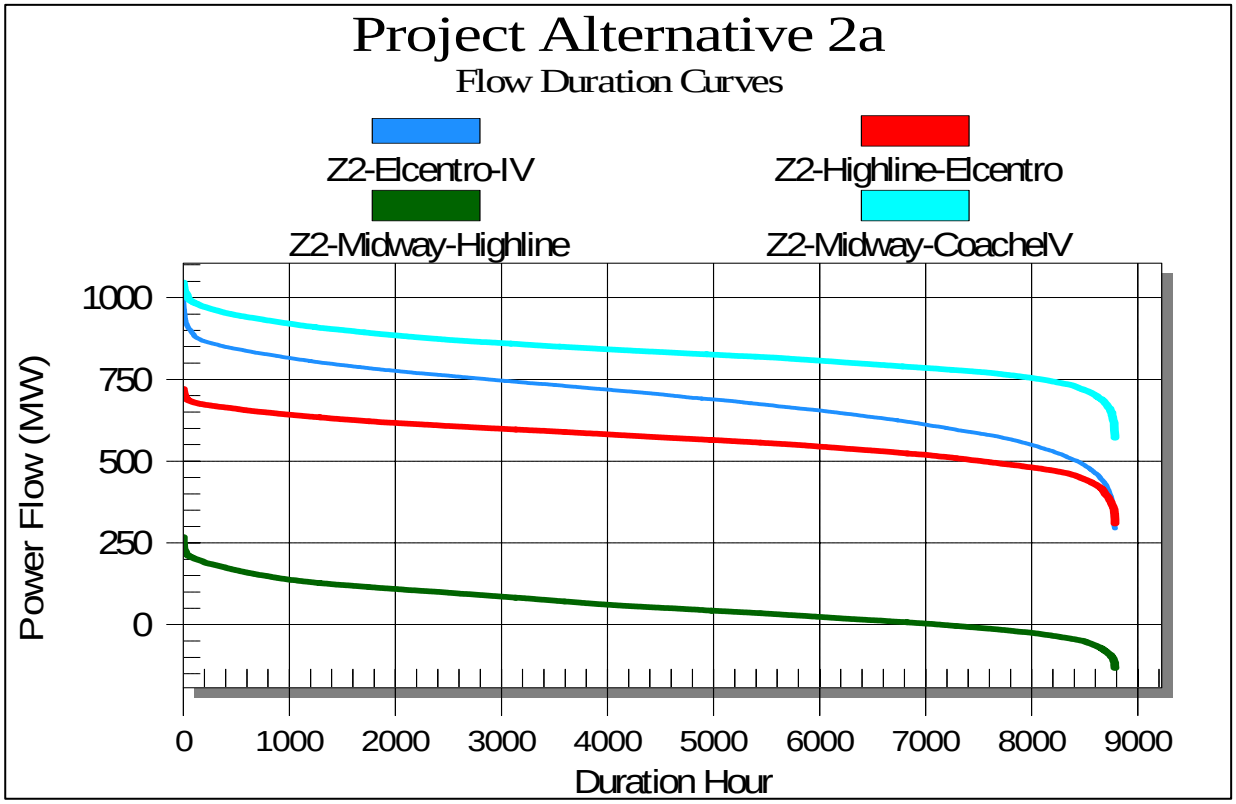

Project Alternative 2
Flow Duration Curves
NORTH OF SAN ONOFRE
Z1- Devers Bank No. 1
Z1-Devers-Valley
Z2-Midpoint-Devers
Power Flow (MW)
3500
3000
2500
2000
1500
1000
500
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

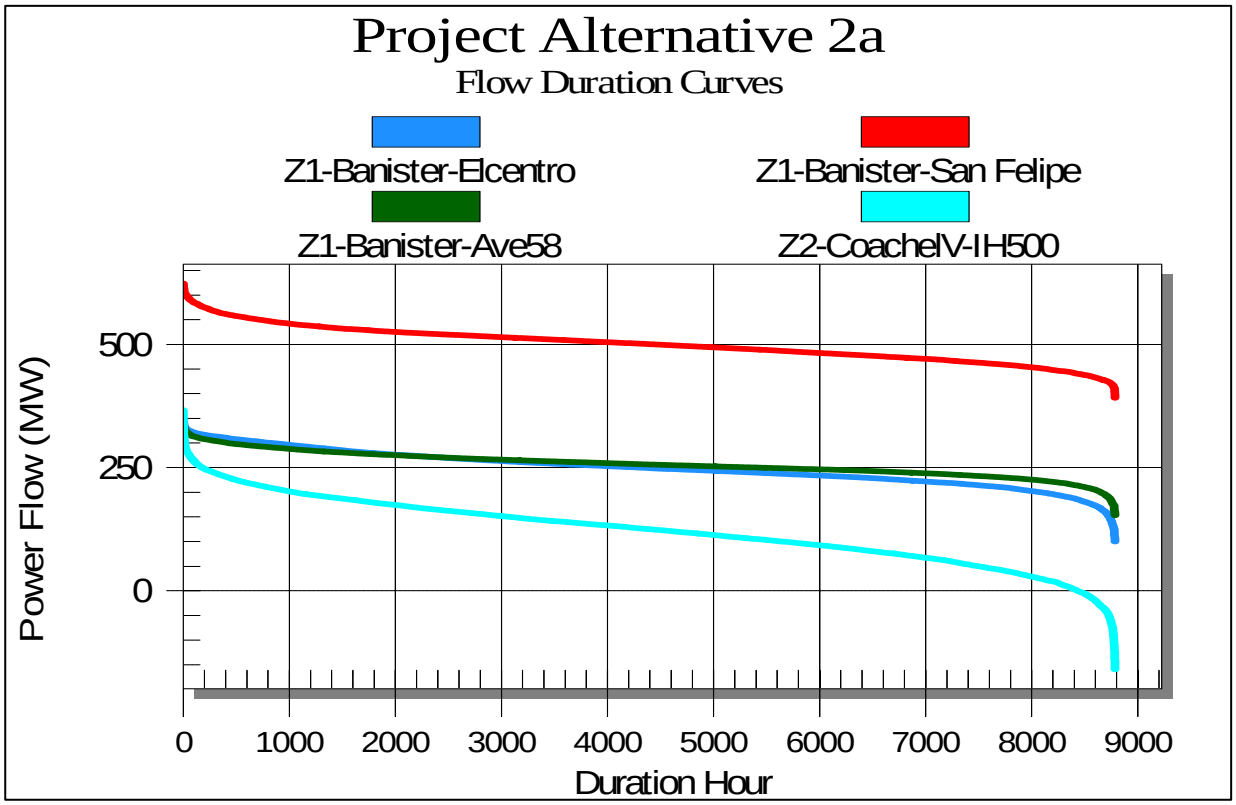
D.2.3.3 Project Alternative 2a: Flow Duration Curves

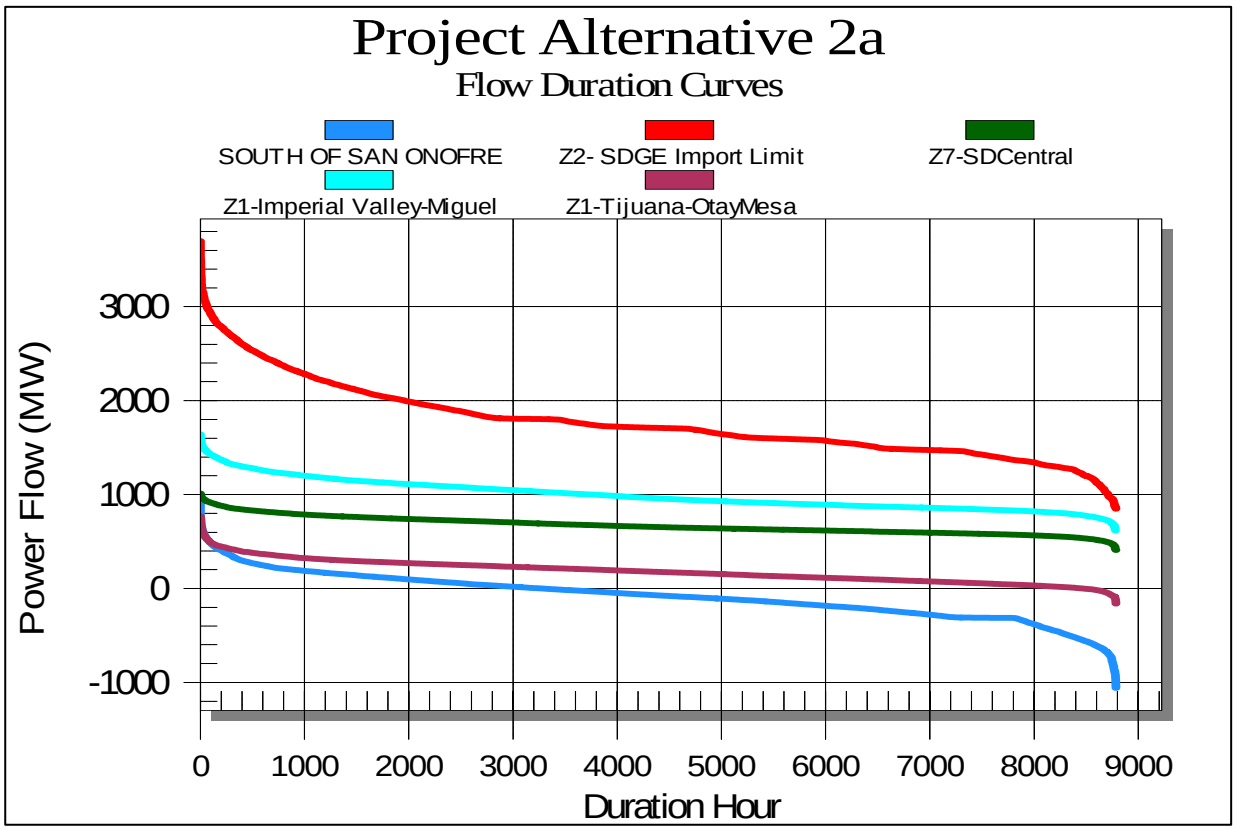


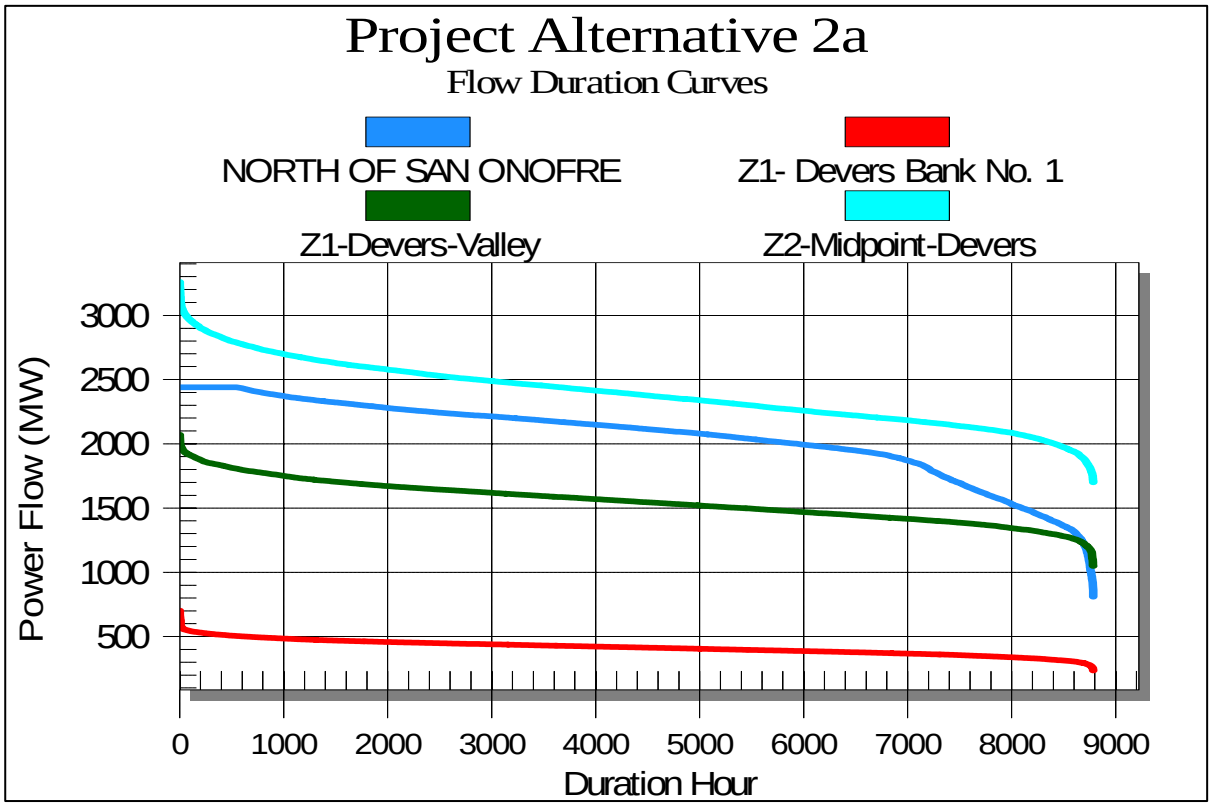




Project Alternative 2a
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

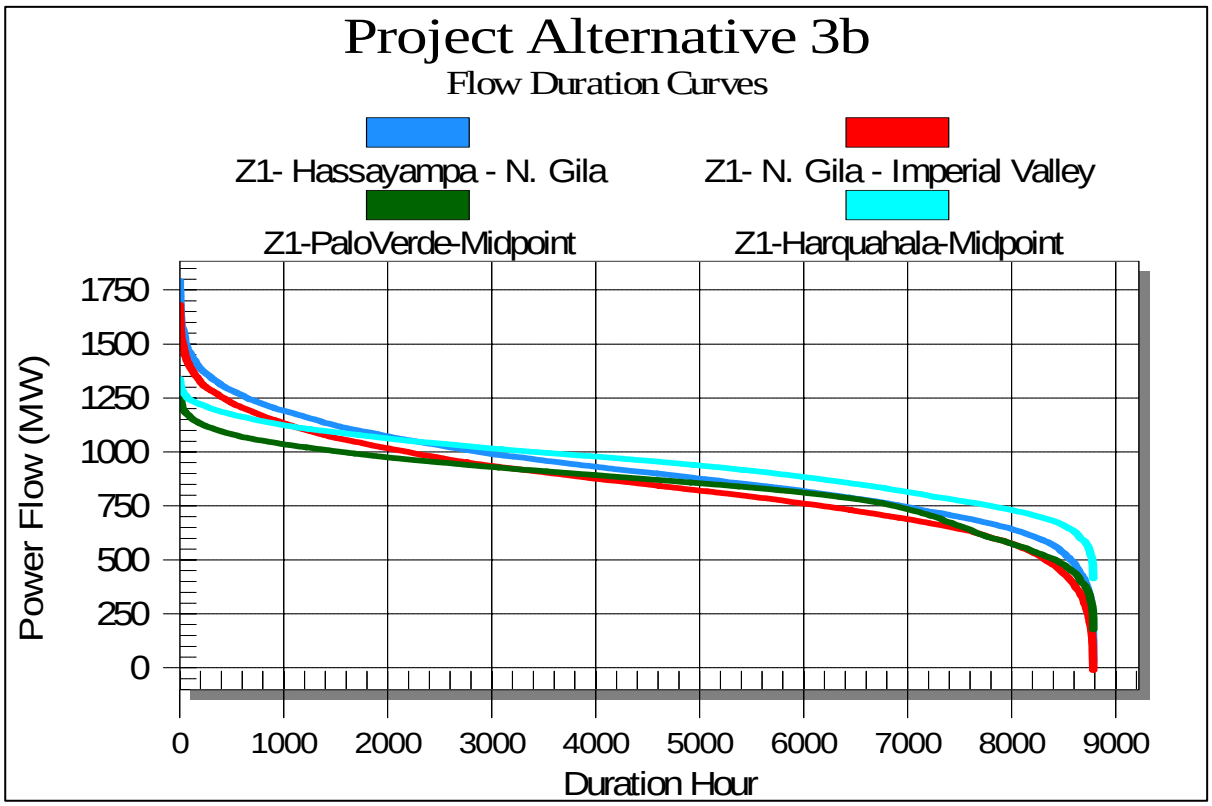

Project Alternative 2a
Flow Duration Curves
Z2-Elcentro-IV
Z2-Highline-Elcentro
Z2-Midway-Highline
Z2-Midway-CoachelV
Power Flow (MW)
1000
750
500
250
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

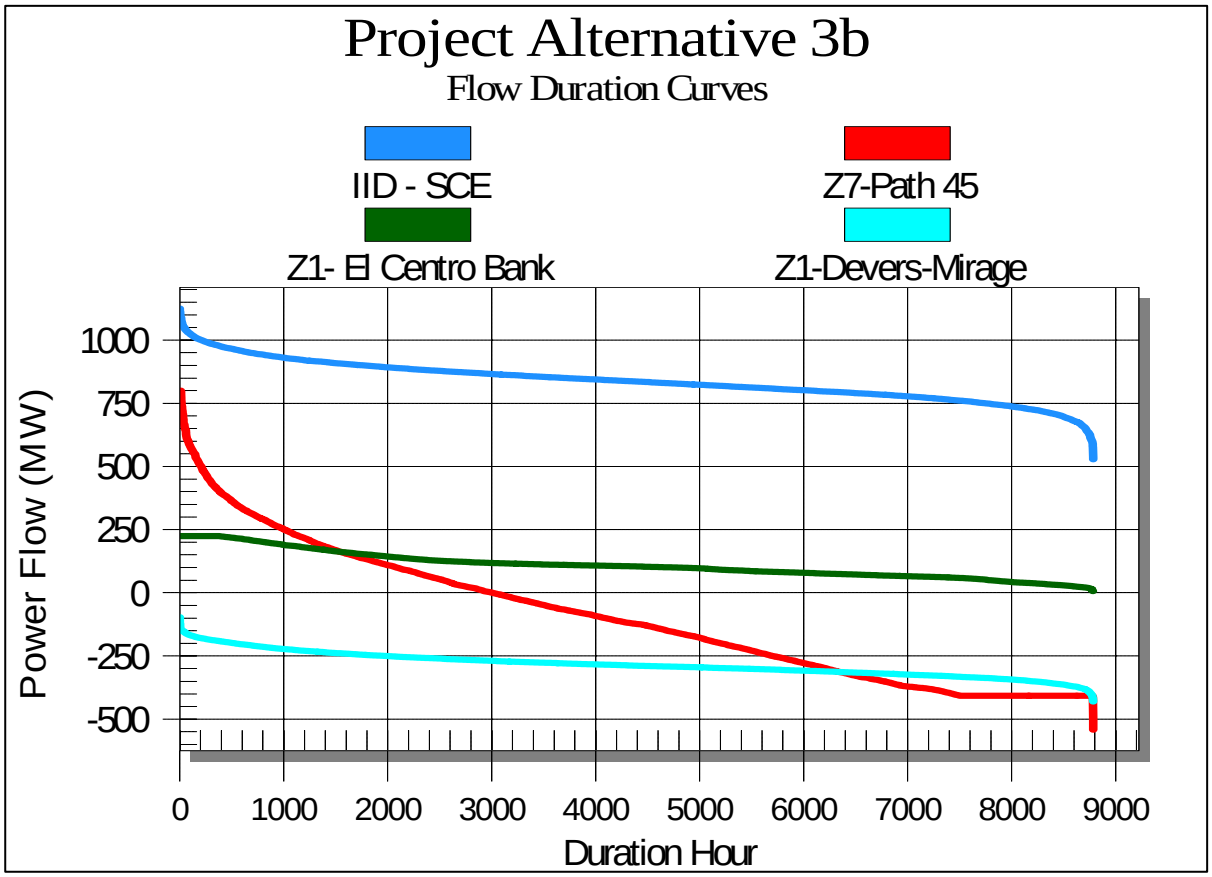

Project Alternative 2a
Flow Duration Curves
Z1-Banister-Elcentro
Z1-Banister-San Felipe
Z1-Banister-Ave58
Z2-CoachellV-IH500
Power Flow (MW)
500
250
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

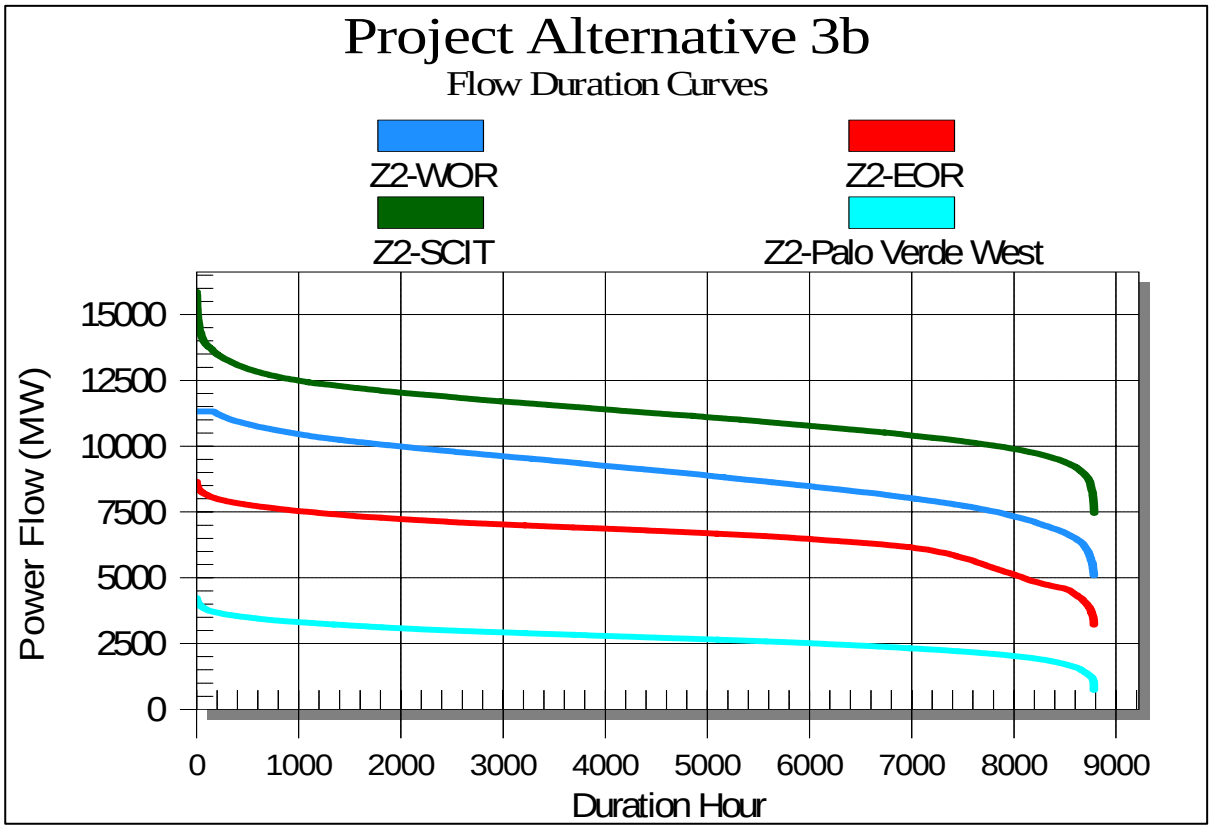

Project Alternative 2a
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z7-SDCentral
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Power Flow (MW)
3000
2000
1000
0
-1000
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

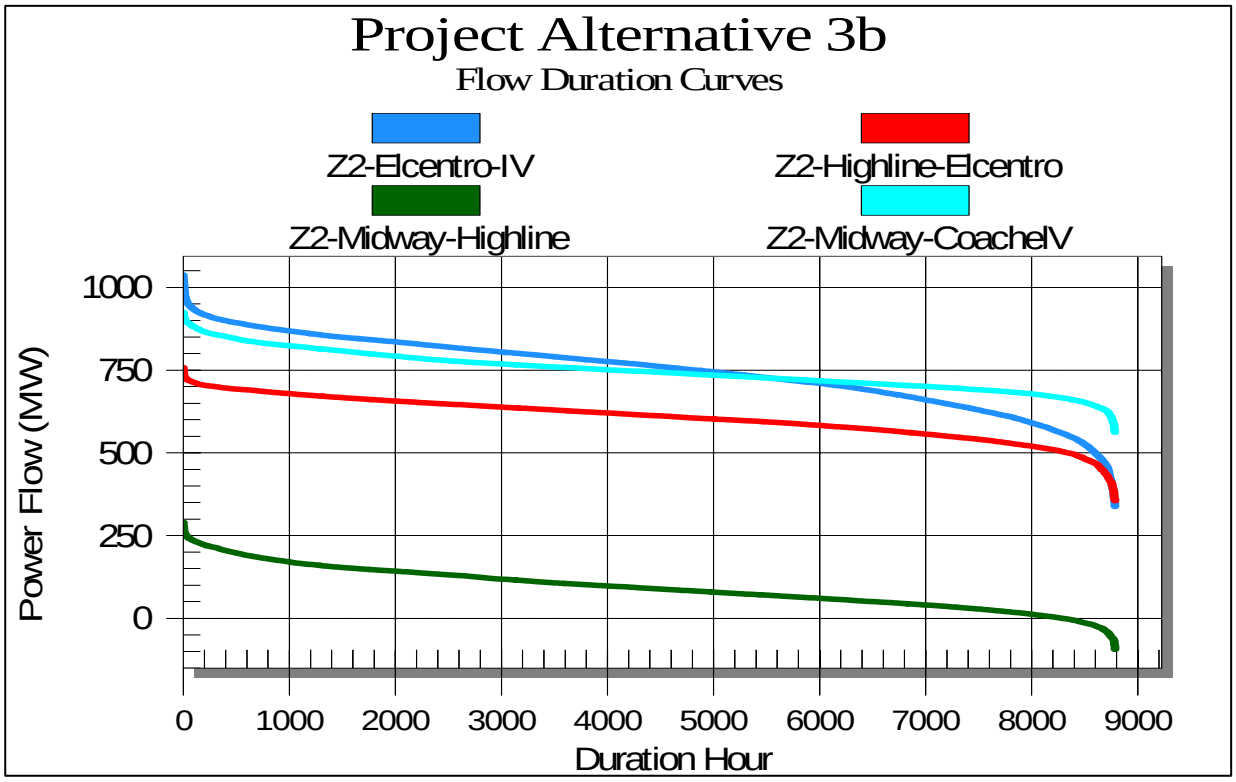


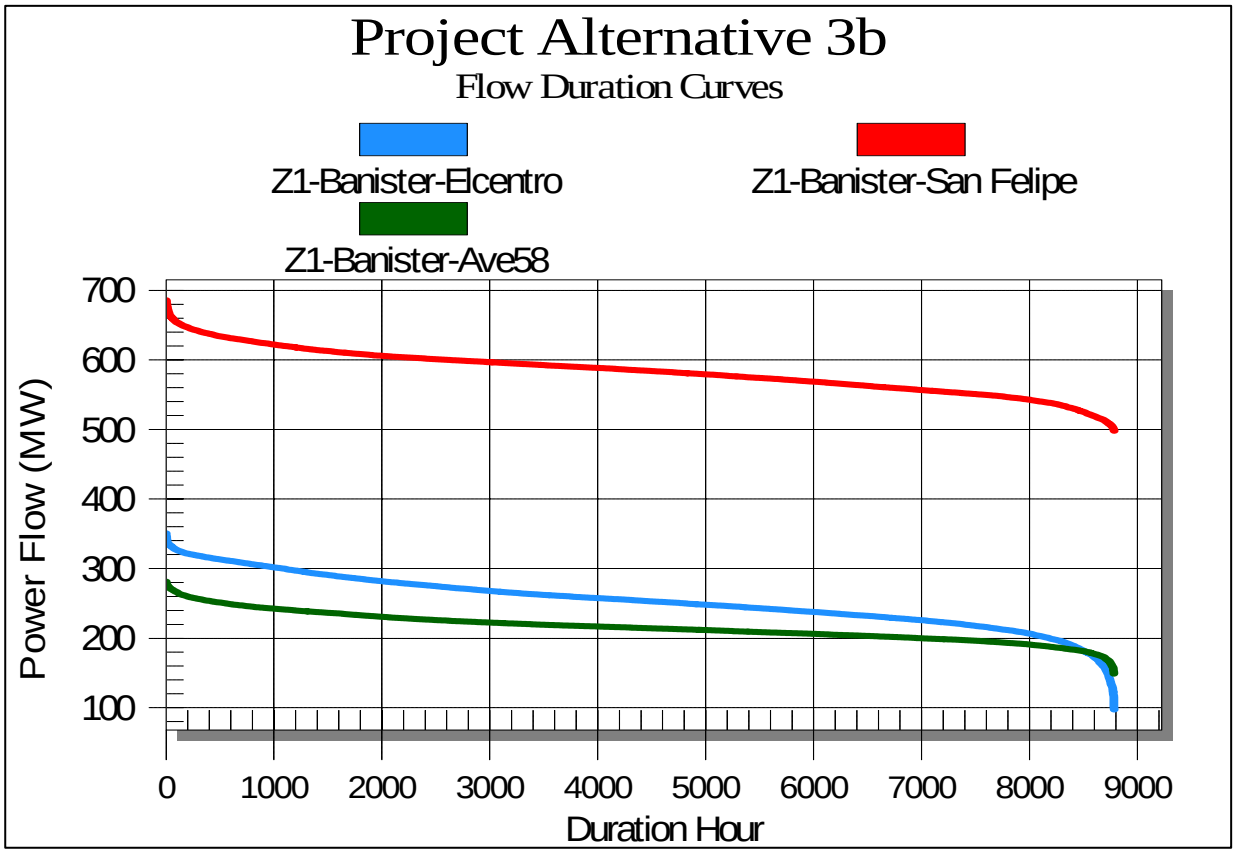

D.2.3.4 Project Alternative 3b: Flow Duration Curves

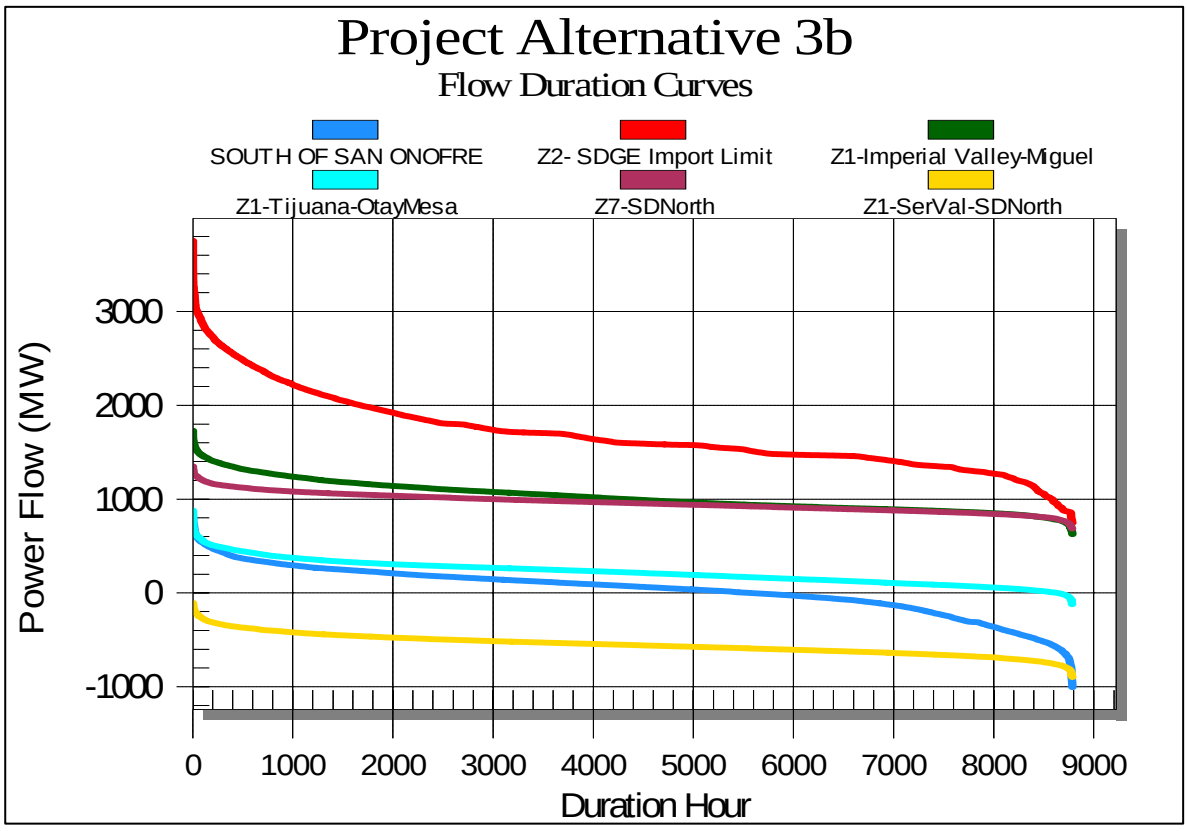


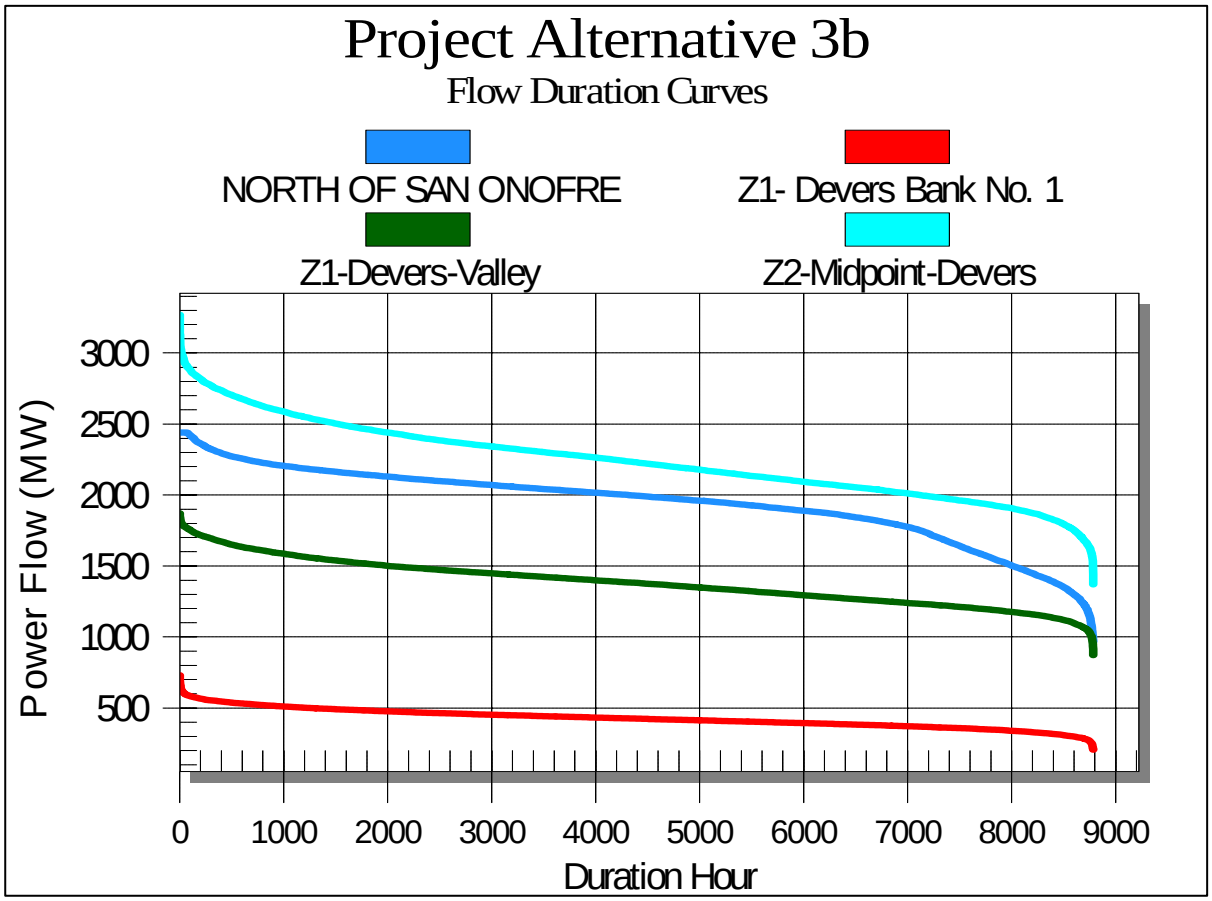

Project Alternative 3b
Flow Duration Curves
IID - SCE
Z7-Path 45
Z1- El Centro Bank
Z1-Devers-Mirage
Power Flow (MW)
1000
750
500
250
0
-250
-500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 3b
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

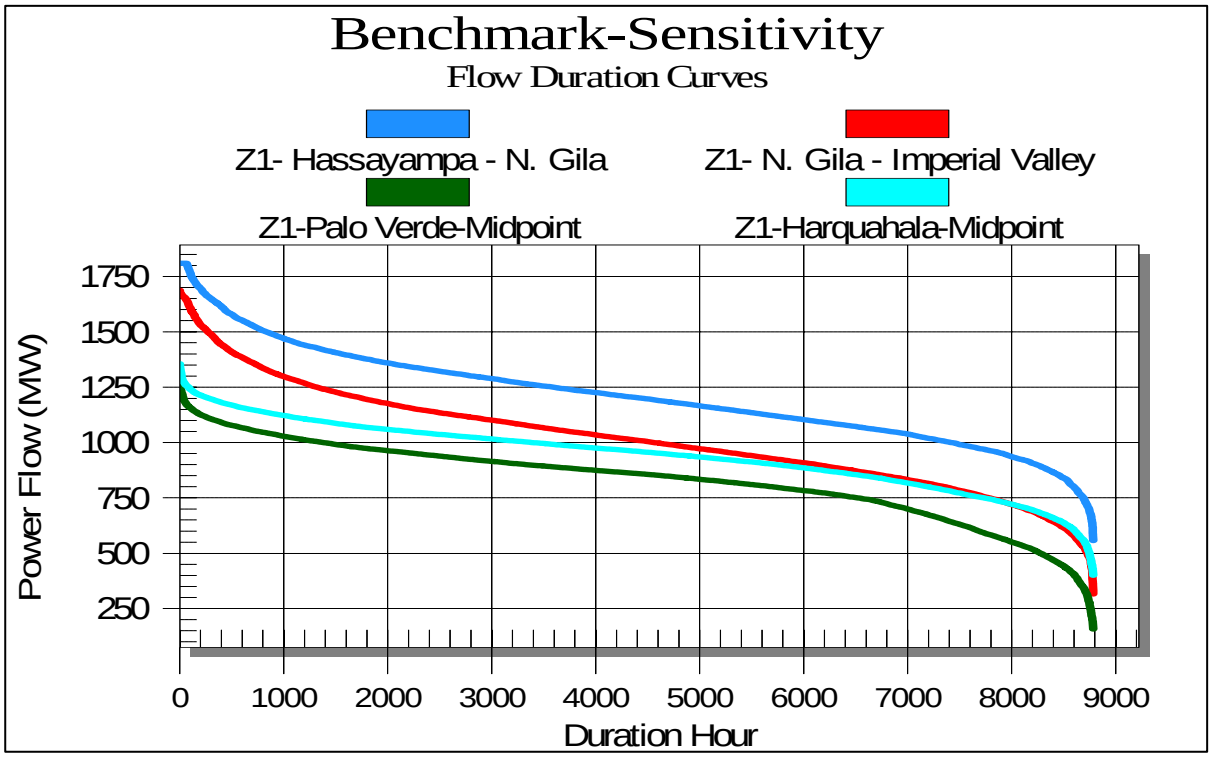

Project Alternative 3b
Flow Duration Curves
Z2-Elcentro-IV
Z2-Highline-Elcentro
Z2-Midway-Highline
Z2-Midway-CoachelV
Power Flow (MW)
1000
750
500
250
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

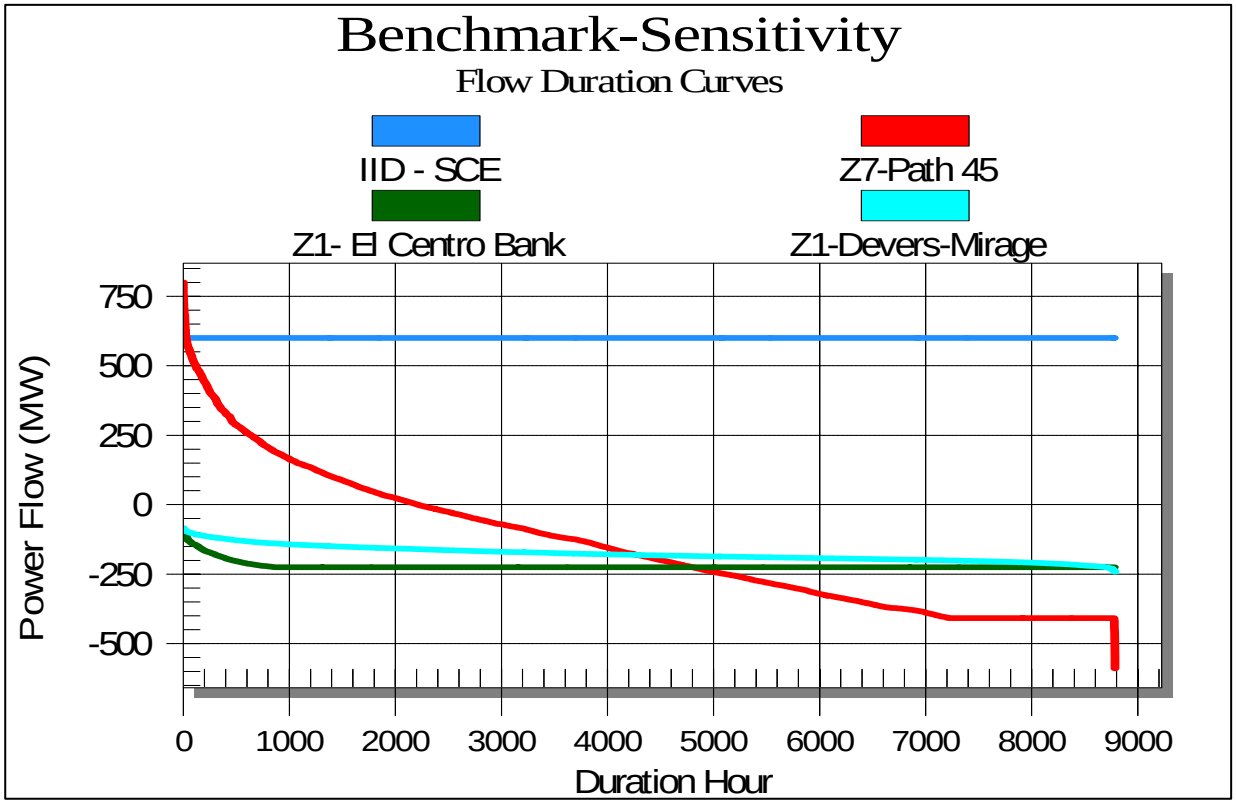

Project Alternative 3b
Flow Duration Curves
Z1-Banister-Elcentro
Z1-Banister-San Felipe
Z1-Banister-Ave58
Power Flow (MW)
700
600
500
400
300
200
100
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

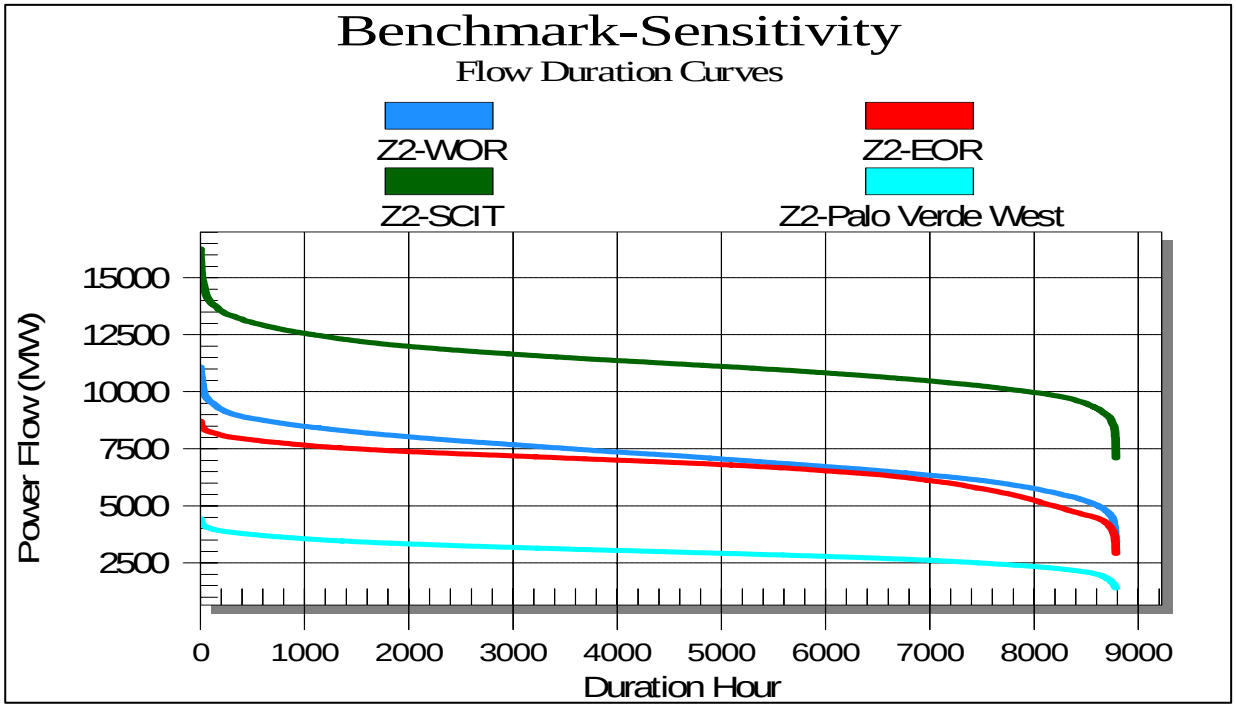

Project Alternative 3b
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Z7-SDNorth
Z1-SerVal-SDNorth
Power Flow (MW)
3000
2000
1000
0
-1000
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

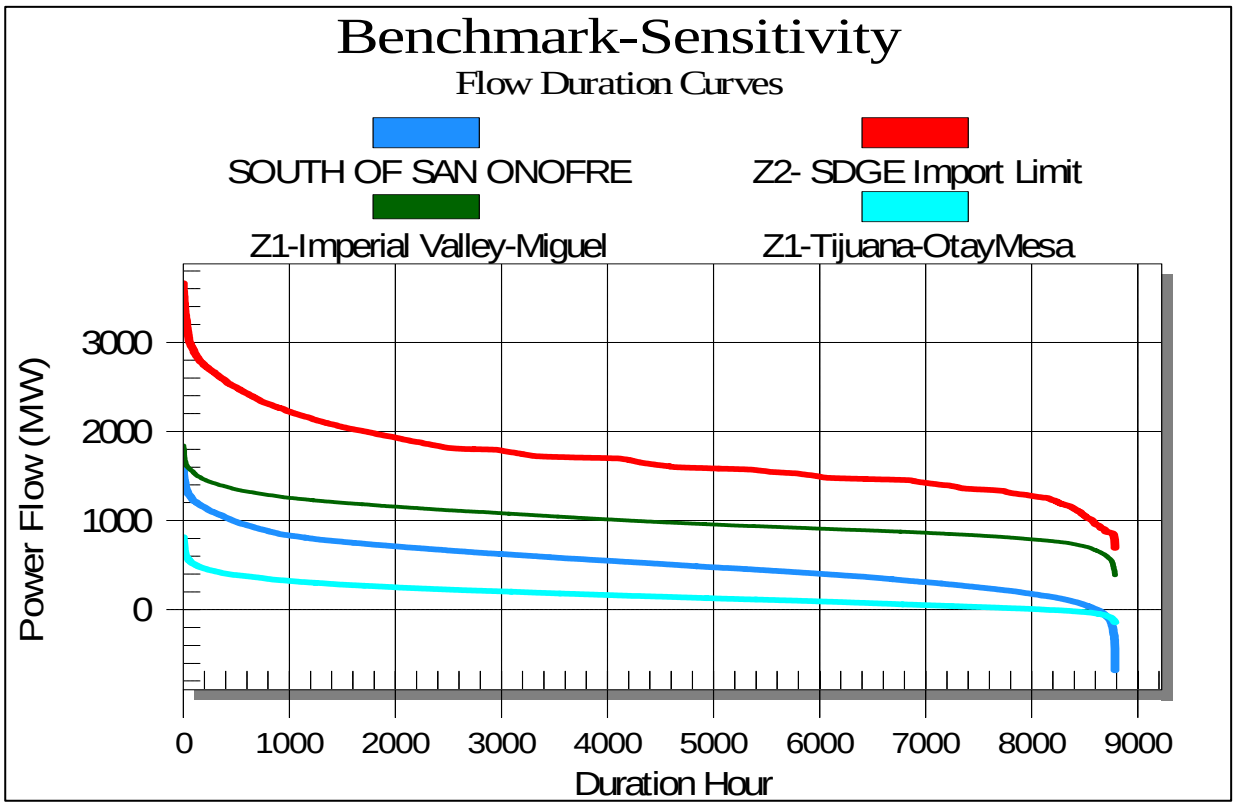

Project Alternative 3b
Flow Duration Curves
NORTH OF SAN ONOFRE
Z1- Devers Bank No. 1
Z1-Devers-Valley
Z2-Midpoint-Devers
Power Flow (MW)
3000
2500
2000
1500
1000
500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

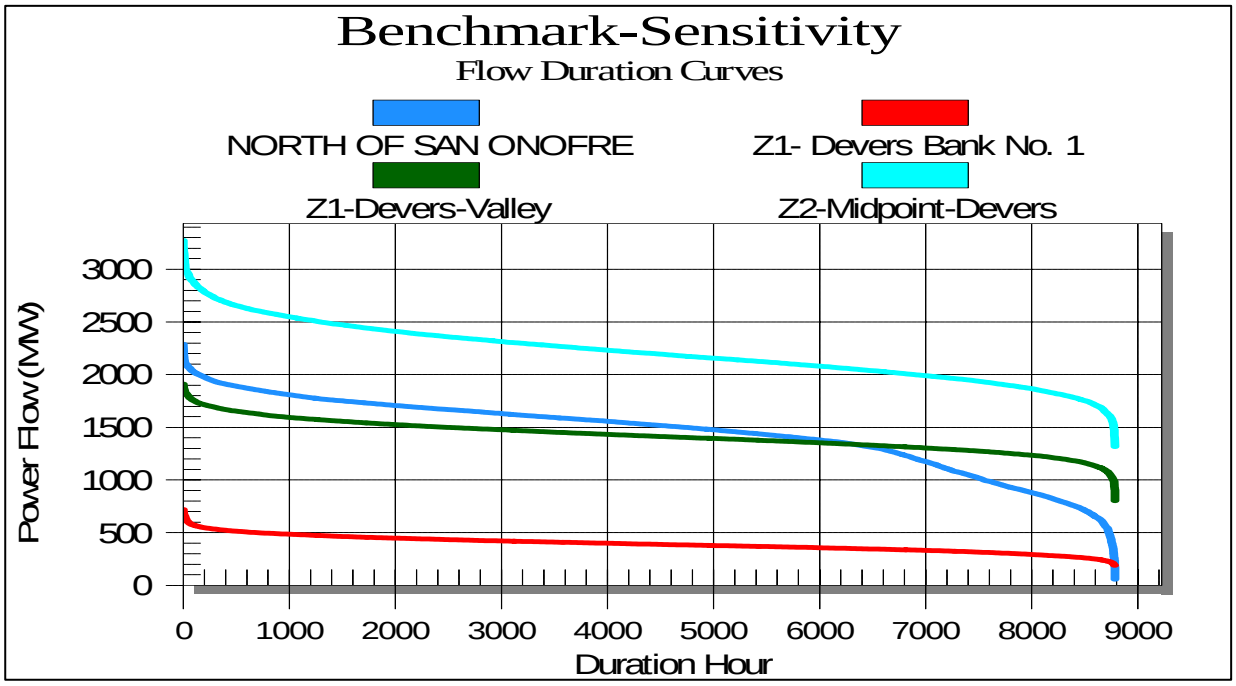
D.2.3.5 Benchmark-Sensitivity: Flow Duration Curves



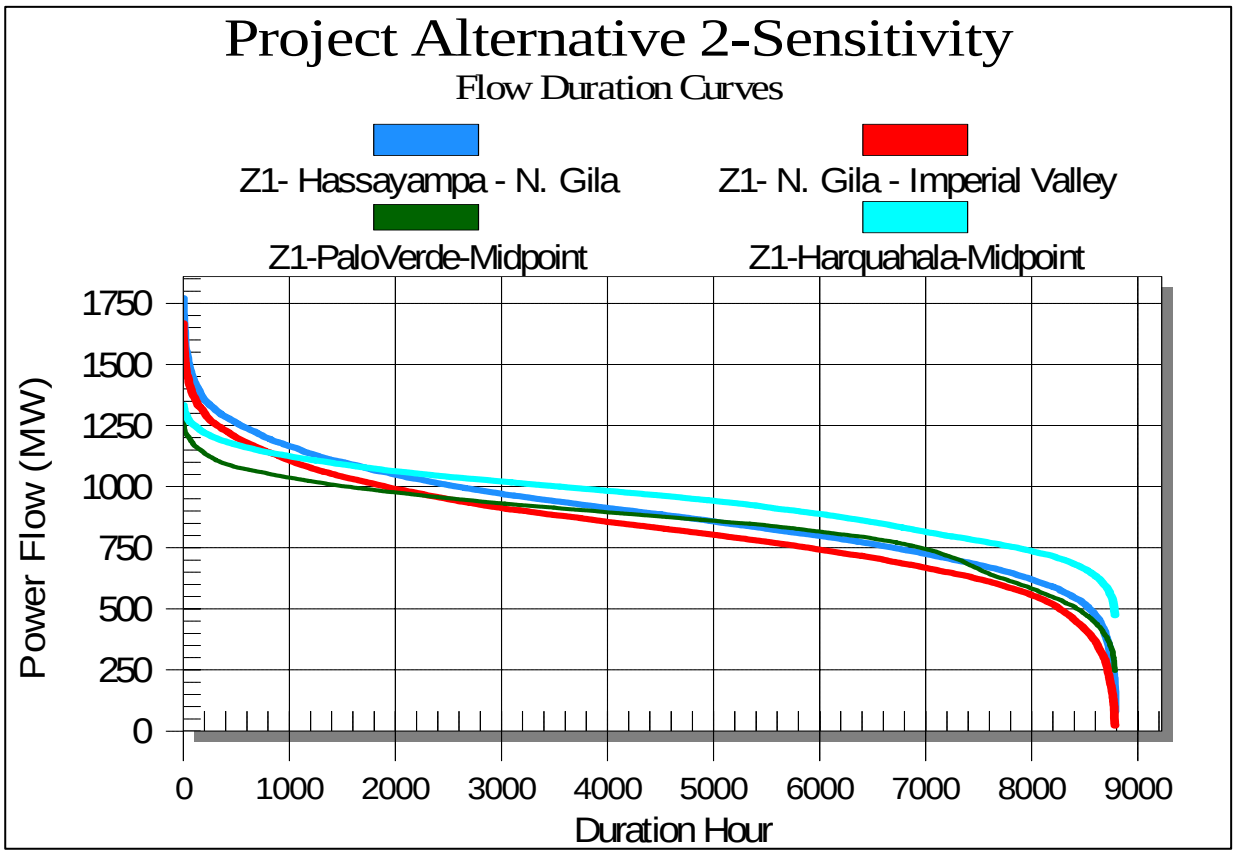



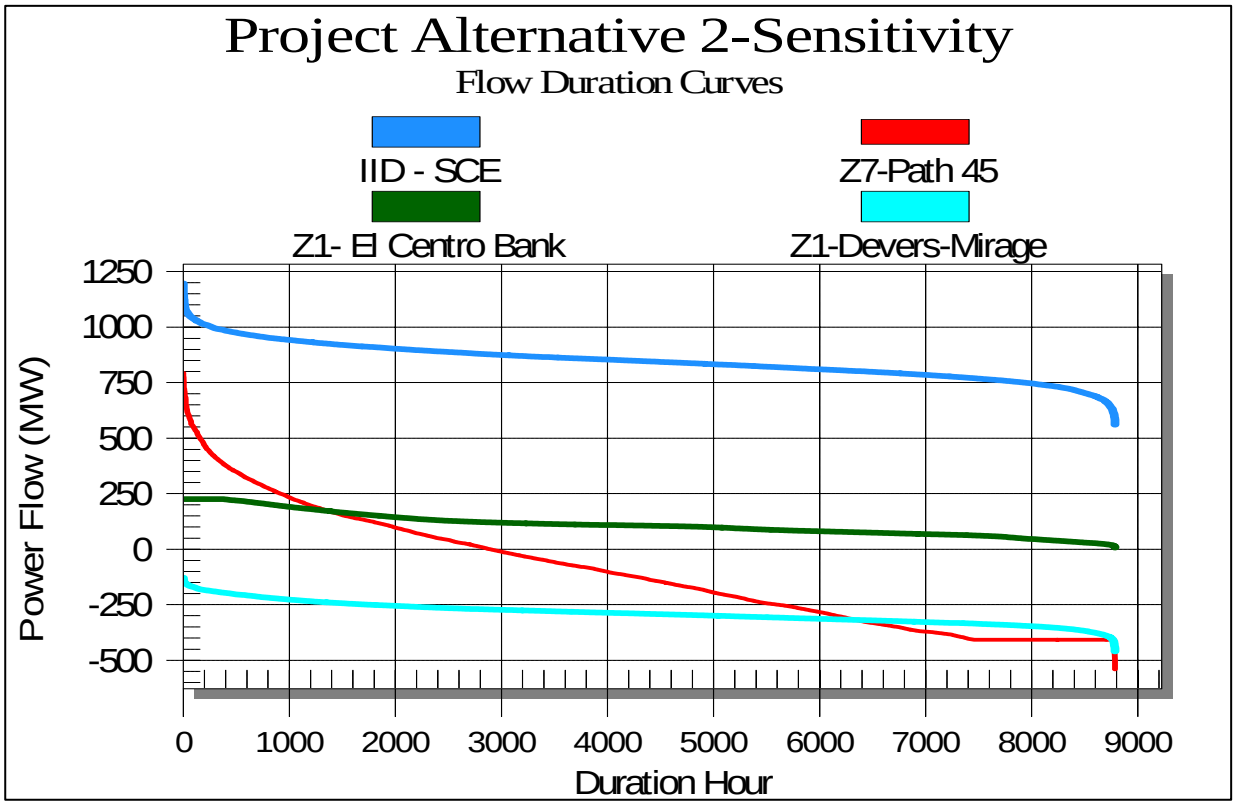

Benchmark-Sensitivity
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

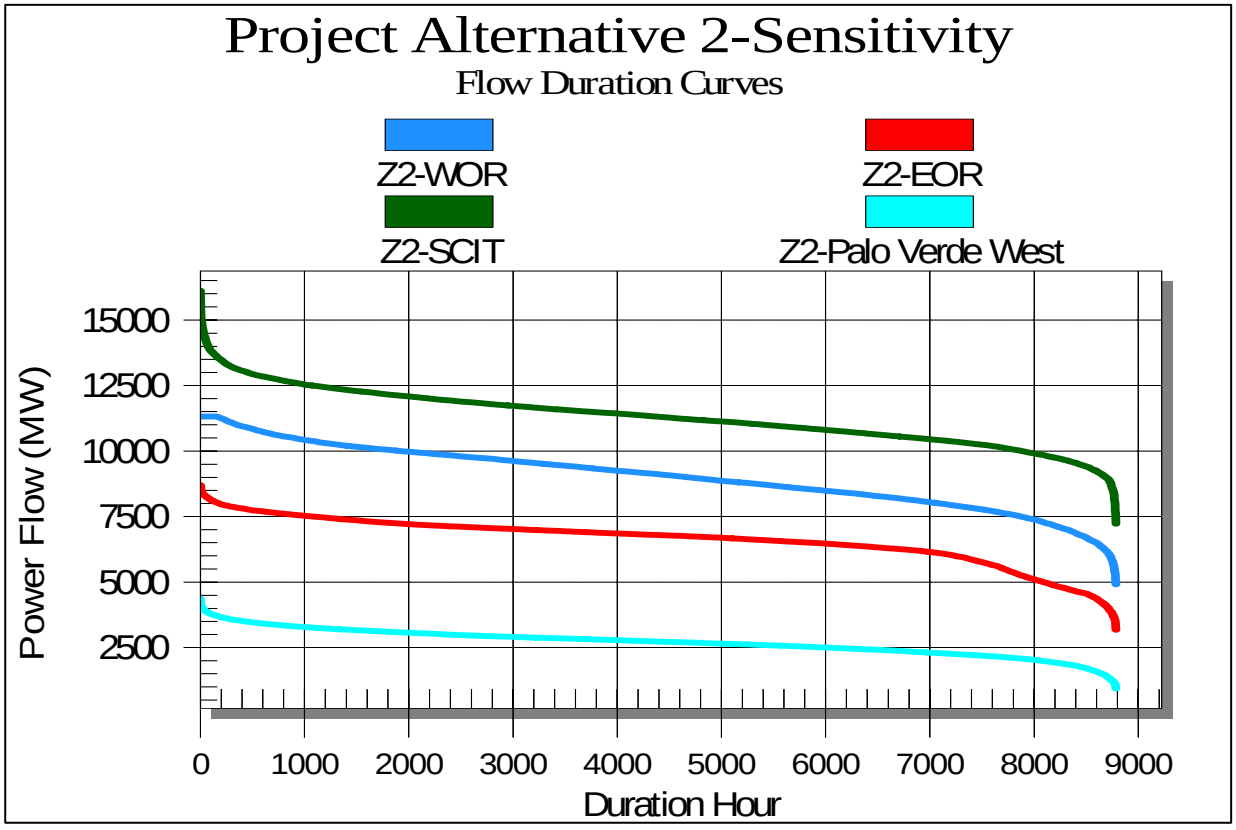

Benchmark-Sensitivity
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Power Flow (MW)
3000
2000
1000
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour

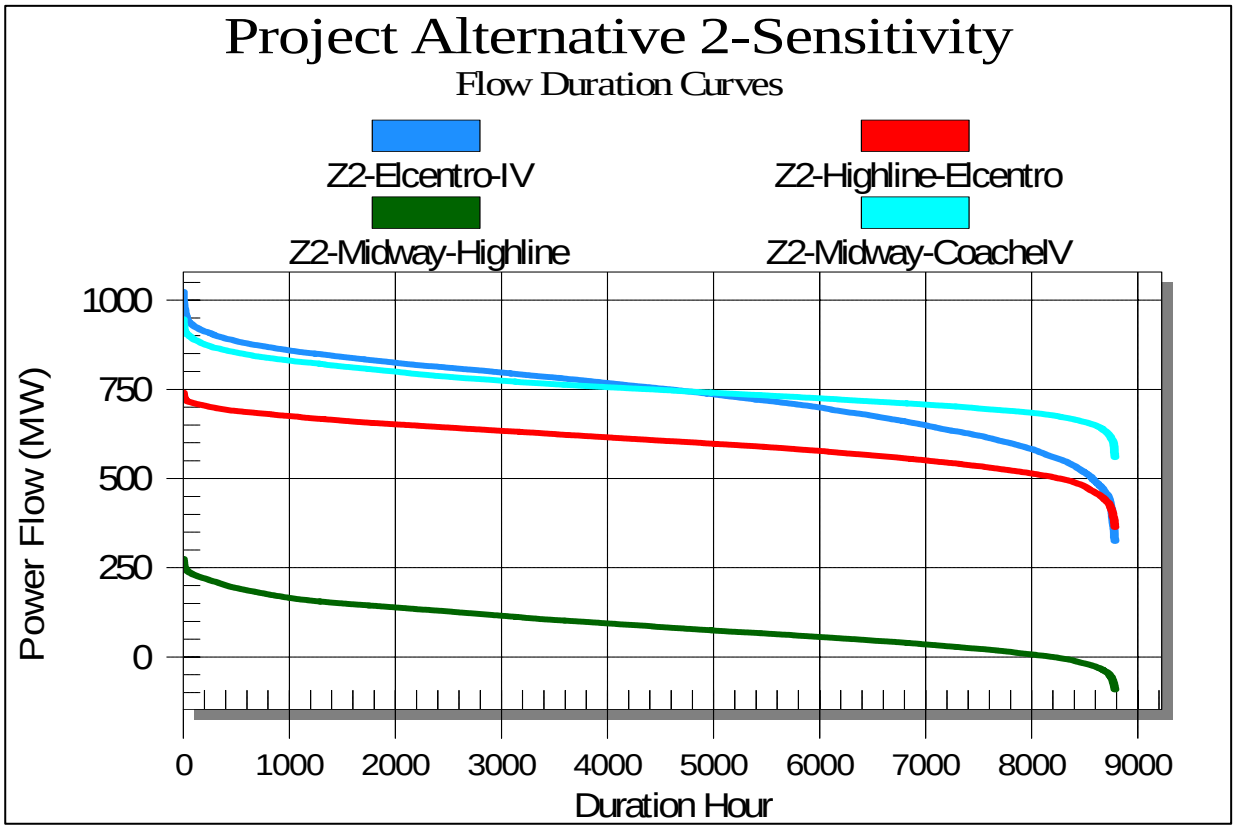


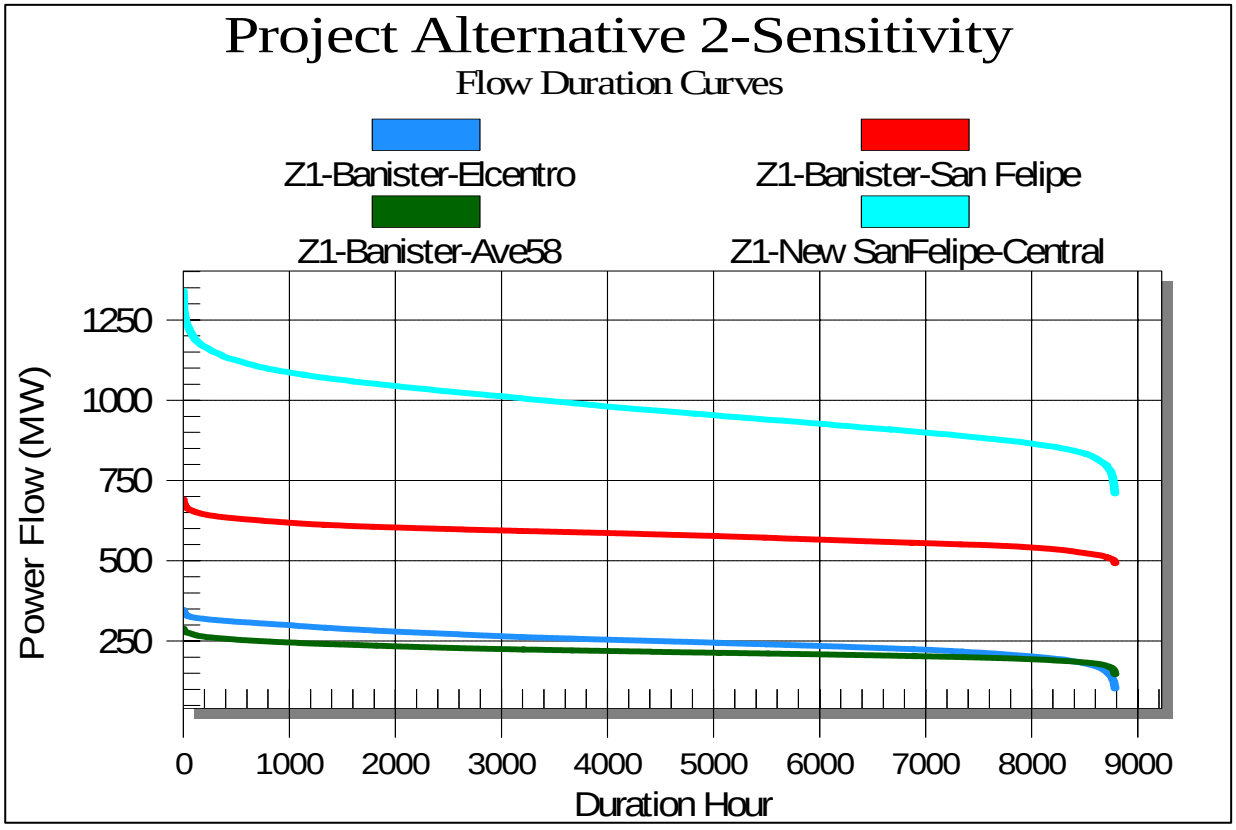

D.2.3.6 Project Alternative 2-Sensitivity: Flow Duration Curves

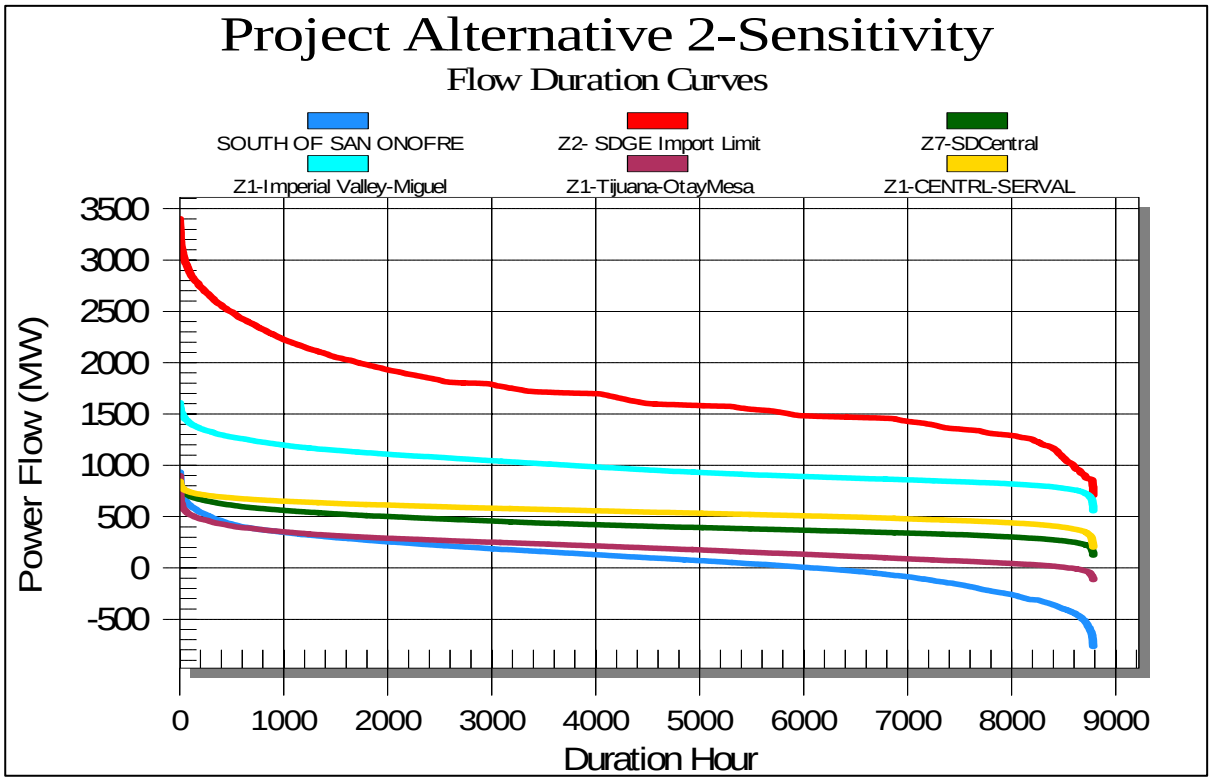


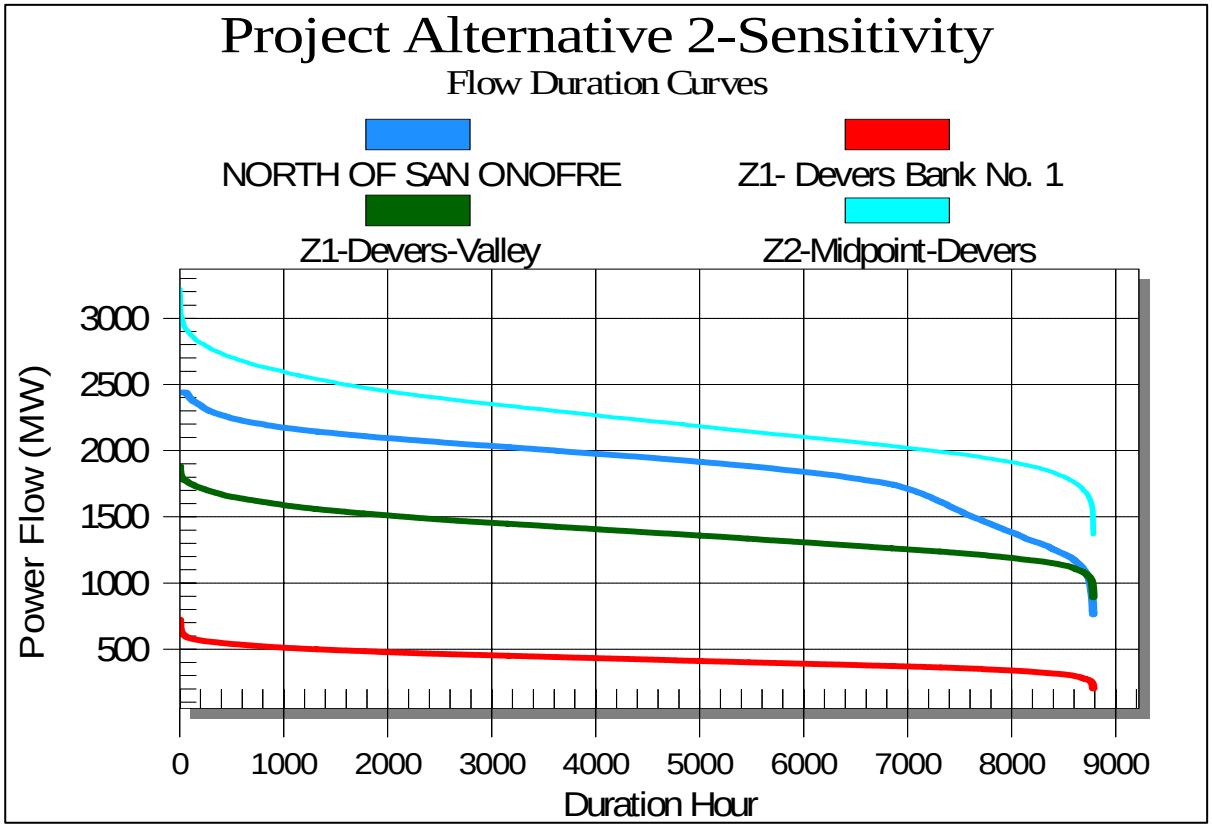

Project Alternative 2-Sensitivity
Flow Duration Curves
IID - SCE
Z7-Path 45
Z1- El Centro Bank
Z1-Devers-Mirage
Power Flow (MW)
1250
1000
750
500
250
0
-250
-500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2-Sensitivity
Flow Duration Curves
Z2-WOR
Z2-EOR
Z2-SCIT
Z2-Palo Verde West
Power Flow (MW)
15000
12500
10000
7500
5000
2500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2-Sensitivity
Flow Duration Curves
Z2-Elcentro-IV
Z2-Highline-Elcentro
Z2-Midway-Highline
Z2-Midway-CoachelV
Power Flow (MW)
1000
750
500
250
0
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2-Sensitivity
Flow Duration Curves
Z1-Banister-Elcentro
Z1-Banister-San Felipe
Z1-Banister-Ave58
Z1-New SanFelipe-Central
Power Flow (MW)
1250
1000
750
500
250
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2-Sensitivity
Flow Duration Curves
SOUTH OF SAN ONOFRE
Z2- SDGE Import Limit
Z7-SDCentral
Z1-Imperial Valley-Miguel
Z1-Tijuana-OtayMesa
Z1-CENTRL-SERVAL
Power Flow (MW)
3500
3000
2500
2000
1500
1000
500
0
-500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour


Project Alternative 2-Sensitivity
Flow Duration Curves
NORTH OF SAN ONOFRE
Z1- Devers Bank No. 1
Z1-Devers-Valley
Z2-Midpoint-Devers
Power Flow (MW)
3000
2500
2000
1500
1000
500
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Duration Hour